A DIGEST OF PURPOSIVE VALUES

By Stephen C. Pepper

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PREFACE

As the title indicates, there is a bigger thing of which this is a digest. But the bigger thing is still incomplete and bids fair to be several years yet in the making, and may turn out to be quite different in the end from what it looks like now. Usually, I know, a digest is supposed to follow the appearance of the thing digested. But there are two good reasons for reversing the sequence this time. One is the desire for a tangible statement of my present views on value to help me in teaching—in short, a text to act as a springboard for class discussion. The other is a desire to draw out, now, as much criticism as possible on what I seem to have found out about values, so that when, or if, I bring out the longer study, it will have the benefit of such criticism.

The two men on whose previous work the present analysis leans most heavily are R. B. Perry and E. C. Tolman. The differences between their analyses and mine are numerous and wide. But without these writers' descriptions of certain types of purposive behavior it would have been difficult for me to know how to get a purchase on the value problem. At the same time, I have sought to do justice to views about value very different from theirs, and I should wish that there may be no important empirical writer on the subject whose views have not had some influence on my conclusions.

Stephen C. Pepper

Berkeley, 1947

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A DIGEST OF PURPOSIVE VALUES

§ 1. A Preliminary Definition of Purposive Behavior

THAT AT LEAST some values lie within the structures of purposive activities is generally admitted. A number of writers declare that all values are purposive. We shall just now neither affirm nor deny this latter position, but only try to discover, in the present analysis, what values purposes do contain and where they are localized.

We shall assume that purposive behavior is limited to the activities of biological organisms and that it is a species of adaptive behavior. Adaptive behavior appears to be of two main types: automatic reflex behavior, and docile behavior. We shall as a first approximation identify purposive behavior with docile adaptive behavior. It is behavior capable of modification through learning. This means that some kind of object is being implicitly sought (or avoided), but that the acts necessary to attain the object are not automatically available in the innate dispositional structure of the organism and have to be acquired or learned. Chain reflex activity, for instance, which seems to explain most of the behavior of insects and much of the behavior of animals, is not, on our definition, purposive. It is highly adaptive, but not purposive. If under certain physiological conditions a bee is stimulated to fly from its hive until the stimulation of a flower attracts it to come to rest on the petals, which condition stimulates it to probe for the honey, which act, completed, stimulates it to back out and fly again, and so on from flower to flower till its sack is full, which condition then stimulates it to return to the hive, and so on, such a chain of reflexes is not purposive behavior;

for the terminal act is connected by a sequence of innate reflexes with the initial act, and the whole series goes off mechanically.

Such a chain reflex series is rigid, and if the terminal act of the series cannot be attained by that particular series of acts, the organism is unable to reach the end for which the series is biologically designed. The characteristic of purposive activity is precisely the lack of an innate sequence of acts connecting the initial act with the terminal one. Consequently, a bridge of acts to connect the two must be learned. Purposive activity implies a gap between the initial and the terminal act. It is consequently more highly adaptive than mechanical behavior even of the highly adaptive chain reflex type, since purposive behavior is adaptable to a great variety of ways of attaining a biologically necessary end, and not rigidly held to only one inborn way of attaining it. As a preliminary definition, then, or as a first descriptive approximation to the field of our study, we may say: Purposive behavior is docile or modifiable adaptive behavior.

§ 2. The Distinction between Appetition and Aversion in Purposive Behavior

THERE ARE two main forms of purposive behavior (defined as above), depending on whether the organism is seeking an object or avoiding it. The one we shall call *appetition*, the other *aversion*. An appetition is a positive purpose, an aversion a negative one. In structure they are quite different. Strangely enough, most detailed analyses of purposive behavior have tried to model both appetitive and aversive behavior on the structure of an appetition. I would direct attention, therefore, to their radical difference in structure. Since most of us are more familiar with the form of an appetition, let us start with this.

§ 3. The Basic Structure of an Appetition

SUPPOSE we begin by getting in mind a good example of an appetition. An aviator afloat on a raft after his plane has been destroyed begins to feel the pangs of hunger. He looks about the raft for signs of anything edible, and sees none, but finds in a package a line and hook for trolling. This gives him the thought that he might catch a fish. For safety's sake he attaches one end of the line to a rope on the raft; then he pays out the line into the sea, and jerks it from time to time, and pulls it in and throws it out afresh, hoping to attract a fish. His efforts are successful, and a large fish bites. He pulls in his wriggling catch, stuns it with a blow so that it cannot escape, takes it off the hook, carves it up with his knife, and eats it till his hunger is satisfied.

Here we should say this purposive act terminates. However, being an intelligent man with an eye to the future and a memory of the past, the aviator does not ignore or throw away what remains of his fish, but stores it in a corner of the raft against a future need. This act of providing for the future is obviously a derived and more complicated act than the first one of satisfying his hunger. It is an act motivated not directly from hunger, but from an expectation or fear of future hunger, which latter motivation is based on the actual hunger he recently experienced and vividly remembers. His desire for a fish on the motivation of actual hunger is a primary and basic appetition. His desire to save some fish for a later time when he expects again to be hungry is a secondary and derivative appetition based on the first type. We shall confine our attention, at the beginning, to basic appetitions of the first type.

The foregoing is an imaginary illustration, though one of a sort many men have experienced, and of a sort all of us ex-

perience in some degree every time we have gone without food long enough to become really hungry.

Let me now quote a summary of a controlled experiment with the same type of appetition, carried on by C. P. Richter with hungry rats. I quote from E. C. Tolman's *Purposive Behavior in Animals and Men* (pp. 32–33): "Richter has shown that general exploratory activity of the rat occurs in cycles corresponding to the cycles in the contractive activity of the stomach. And, further, if there be attached to the rat's main living cage a small cage in which there is food, he found that it is at the height of each activity cycle that the rat passes into the food-cage and eats, after which the animal returns to the living cage, cleans himself and then subsides. Richter therefore represents the relationships between the stomach contractions, the animal's activity in the main living cage and in the smaller attached eating cage by [a] schematic diagram. To quote [from Richter]: 'Thus we see that the small contractions give rise to the diffuse activity in the large cage. The animal seems at first simply to be annoyed and becomes more and more restless as the contractions grow larger, until the "main" contractions set in and the general discomfort becomes centralized in the hunger sensation. This stimulus dominates the behavior of the organism and it enters the food-box to eat. When its appetite has been satisfied, it passes into a period of quiescence which lasts until the stomach has become empty and the contractions have started up again.' " Tolman concludes, "It appears, in short, that it is the hungry, or satiation-demanding, rat who is the exploration-demanding rat. And further it also appears that at the height of hunger, the exploratoriness is specifically directed towards food."

A cursory glance at acts of this type shows, as the general structure, a *governing propensity* controlling a series of *subordinate acts* towards the attainment of a *goal.* This tripartite

division is evident in both of our illustrations. The hungry aviator wants a fish to eat and goes through a succession of acts to catch one. The hungry rats want food and move through a succession of acts to reach it. If we spread out these factors in diagrammatic form, the general structure of an appetition may be represented thus:

Governing propensity | Subordinate acts | Goal

Our task now is to describe more precisely the nature of each of these factors and find how they are related to one another. We shall find that in describing any one of them we cannot keep the others entirely out. But we can focus our attention primarily on each in turn, and we shall start with the governing propensity.

§ 4. The Governing Propensity of an Appetition

THE GOVERNING propensity is in some way the source of the dynamics for the whole appetitive structure, and in some way determines the goal in advance. The subordinate acts are clearly subordinate to it, and are brought in by the dynamics of the governing propensity to bridge the gap between the organism in its present need and the goal which will satisfy the need. These acts are not determined ahead in the structure of the organism. It is this very fact, as we saw, that characteristically defines a purpose. The subordinate acts have to be discovered. They may be correct or incorrect. Their correctness lies in their propensity to lead to the goal on the attainment of which the appetition terminates. The subordinate acts thus depend upon the goal and upon the propensity to attain the goal. And the goal itself also depends upon the propensity to attain it. The governing propensity is, accordingly, the dynamic center of the system.

To assure ourselves of this fact, let us consider the dynamics of the aviator's acts in more detail. He is hungry and wants a fish. Under the impulse of this governing propensity, he goes through a sequence of acts which in review we see were all planned to produce a fish for eating. The sequence, going backward, is this: in order to eat a fish, he must have it in his hands; to have it in his hands, he must have it on the raft: to have it on the raft, he must catch it; to catch it, he must hook it; to hook it, he must have a hook and line in the sea; to have a hook and line in the sea, he must have one on the raft; and here it is in the opened package in his hand. The gap from his sitting hungry on the raft to his having a fish and eating it is thereby bridged.

But notice that every act depends for its motivation on the anticipation that it will lead to the next one toward the goal, and that thus the whole series depends upon the anticipation of the goal, and that consequently the propensity to reach the goal is the dynamic source of the whole system. Moreover, the way the system operates is that somehow the governing propensity contains a forward reference to the goal, which then governs the anticipatory references to all the subordinate goals of the subordinate acts. The crux of the matter, then, is to determine what is the forward reference to the goal contained in the governing propensity.

There is a potential controversy over this matter that has not fully come to light in the literature on the subject. Some writers identify the forward reference with a cognitive anticipation, others with a need demanding quiescence. On close examination of the evidence and analysis of the governing propensity, it is quite clear that in what is generally regarded as the typical appetitive act both a cognitive anticipatory reference and a demanding need are present. The latter, moreover, controls the former. I suggest, then, that we proceed on this assumption and make qualifications later, should we find them necessary.

When we say that the aviator's governing propensity was his wanting a fish, we may easily overlook the fact that the want element in his propensity was hunger and the fish was his cognitive anticipation of a possible object capable, under the circumstances, of satisfying his hunger. His primary goal was to satisfy his hunger, and the fish was the object which, he anticipated, would, when eaten, produce this satisfaction. The fish, in other words, was the goal of his anticipation but not the goal of his need, which was that his hunger should be brought to quiescence.

It appears, then, that the governing propensity of the aviator's appetition to catch a fish contained two distinct factors: a need, and an anticipation. He was hungry, and he expected a fish to satisfy his hunger. The first is clearly the dynamic factor, the second the cognitive factor. Let us call the first the *drive* and the second the *anticipatory set.* These factors determine, as we saw, corresponding divisions in the goal. Let us call the goal of a drive its *quiescence pattern* and the goal of an anticipatory set its *goal object.* Leaving empty the section for subordinate acts, we may now represent the structure of an appetition as follows:

Governing propensity		*Subordinate acts*	*Goal*	
Drive	Anticipatory set		Goal object	Quiescence pattern

§ 5. The Drive and Its Quiescence Pattern

LET US examine next each of these pairs, namely, drive with its quiescence pattern, and anticipatory set with its goal object. It should be noticed that, in this section, we shall be describing only innate appetitive drives; for we shall wish to describe other drives later, and these differ in certain respects from

innate appetitive drives. By these latter we mean such impulses as hunger, thirst, sex, and the like.

Innate appetitive drives are characterized by three important traits: (1) they have distinctive patterns of action, which we shall call *impulse patterns;* (2) they have generally, and probably always, certain *innate readinesses* which are acts preparatory to the attainment of the goal, including any innate acts contained in the quiescence pattern; and (3) they have certain *conditions of quiescence.*

About innate readinesses I shall not have much to say. For hunger they consist in salivating and other acts or dispositions preparatory to eating and digesting food. Unless we had innate readinesses to put edible things in our mouths, to chew, and to swallow, the hunger drive would have much difficulty in attaining its goal, if indeed it could ever attain it at all. In sex, many of the innate readinesses are almost in the nature of subordinate acts partly bridging the gulf between the need of the organism and its quiescence pattern. Innate readinesses are included as features of the drive because they go into action so far as they can on the emergence of the drive, and have a certain amount of directive power in guiding the organism to its goal. But in a mature, well-learned, appetitive act they take their places among the subordinate acts or in the quiescence pattern.

The impulse pattern is the strictly dynamic factor in an appetitive drive. It is the stomach contractions, for instance, in hunger. Its action is very clear in Richter's rats. When the stomach contractions start, the rats begin to be restless. When the contractions reach a greater intensity, the rats go to the food cage and eat. When the contractions cease, the activity of the rats subsides. In short, it is the stomach contractions which drive the rat to its goal of food, and the rat, short of death or extreme fatigue or the emergence of a stronger drive, will continue its efforts until it attains food and a full stomach and the contractions cease.

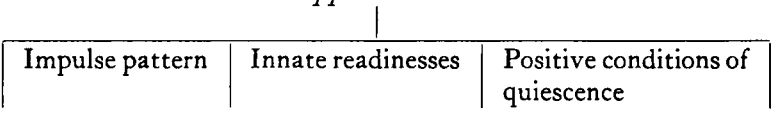
For hunger the impulse pattern is well known; it consists in a rhythmical pattern of observable movements. These set up or constitute a tension which is the source of the organism's activity. For other appetitive drives, however, the impulse pattern is not so crassly observable and is identified rather as a pattern of tensions. So, in thirst, we do not know of anything corresponding to stomach contractions, but we do know that a dry throat sets up a pattern of tensions for drinking a liquid. Whatever constitutes or produces this pattern of tensions is the impulse pattern for thirst. Similarly for the other appetitive drives.

Any such impulse pattern has its conditions of quiescence. In the basic appetitive drives, the conditions of quiescence, when realized, are certain specific acts of the organism which we are calling quiescence patterns and which may also be called consummatory acts. The quiescence pattern for hunger is eating food, filling the stomach, and digesting. For thirst, it is drinking. For sex, it is the orgasm and in some degree the preliminaries of an orgasm. These quiescence patterns are the only conditions (apart from death or extreme fatigue, or an arousal of a stronger and inhibiting drive) which will cause the quiescence of the impulse pattern and bring the appetition to a halt. They are, accordingly, causal properties of the drive, just as malleability is a causal property of some metals, and specific valences and affinities are causal properties of all chemical elements. Every drive has as one of its traits the property of its conditions of quiescence, and in an appetitive drive these consist specifically in the realization of a pattern of activity in the organism which we have named the quiescence pattern.

The importance of recognizing the conditions of quiescence as properties inherent in the drive is that these constitute the connecting link between the impulse pattern as the initiating dynamic element in an appetition and the quiescence pattern

as the terminating feature of the goal. It is only by virtue of the fact that there is just this one specific pattern of activity for each appetitive drive—eating digestible food for hunger, drinking a thirst-quenching liquid for thirst, having an orgasm with a mate for sex—that it can be shown that an appetitive drive has this specific quiescence pattern for its ultimate goal. The quiescence pattern is the consummatory goal of an appetitive drive because only through it can the drive be terminated. It is, therefore, a property of the appetitive drive that it demands, whenever initiated, this specific pattern of activity in the organism for its termination. The condition of quiescence for an appetitive drive is the attainment of a specific consummatory act of the organism. In other words, these are *positive* conditions. Such a positive consummatory act is a definitive trait of an appetitive drive, which, as we shall see, is not a trait of an aversive drive. An aversive drive has only *negative* conditions of quiescence. It does not demand a specific consummatory act.

In diagrammatic terms, we may describe an appetitive drive as follows:



§ 6. The Anticipatory Set

We now turn to the anticipatory set and its goal object. The drive is the dynamic element of an appetition, the anticipatory set is the cognitive element. An appetition, before it acquires an anticipatory set, is, as we say, "blind." This does not mean that a goal is not specifically demanded by the drive, or that the organism does not act so as to tend to attain its goal. For, as we have seen, the appetitive drive has a steady reference to its quiescence pattern in terms of its posi-

tive conditions of quiescence which are a property of the drive itself. But this reference is not a cognitive reference, and, apart from experience in attaining the consummatory act, the organism is cognitively unaware of its goal.[1] The references of an anticipatory set, however, are cognitive. An anticipatory set is a set of cognitive references directed upon an object which is expected to produce the quiescence pattern or consummatory act. This object is the goal of the anticipatory set and so we name it the *goal object*. A goal object is the object of an anticipatory set.

In our example of the aviator, hunger was his drive and eating food and digesting it his quiescence pattern. But a fish was his goal object, and the idea of a fish ready at hand was the anticipatory set of his governing propensity which controlled the whole sequence of acts that followed.

The example of Richter's rats is particularly informing. We have evidence that the hunger drive was the source of the general activity of the rats about the living cage, for this activity did not begin until there were mild stomach contractions (the impulse pattern of hunger). The rats apparently felt restless without yet knowing why. The hunger was not intense enough, apparently, to arouse the specific idea of food. They were acting on the hunger drive without the control of an anticipatory set. But as soon as the stomach contractions attained a certain intensity the nature of their activity abruptly changed and they directed their movements to the feeding cage and to eating. At that moment we observe the action of an anticipatory set entering into the governing propensity of the rats. On the impulse of the stronger hunger drive there emerged a set of anticipatory references to a goal object, namely, the food in the feeding cage.

[1] There may, to be sure, be some dim prescience of the consummatory act in terms of innate readinesses to perform it, which readinesses may be felt as tensions to perform the act. But essentially our statement holds. It often happens that we want something without knowing what it is we are wanting.

It is a trait of an anticipatory set that it may be true or false, correct or incorrect, depending on whether the goal object in fact does or does not produce the quiescence pattern of the drive. The goal of a drive, it should be noticed, cannot be characterized as true or false. The quiescence pattern of a drive *in fact* causes the quiescence of the drive. There is no question of correctness or incorrectness. The hunger drive ceases in fact when the stomach is filled and digestion is proceeding. But the goal object of an anticipatory set may not in fact produce the quiescence pattern of the drive. In that event, the anticipatory set was in error and false. In short, an anticipatory set is fallible in respect to its goal object, whereas there is no possibility of error in the relation between a drive and the quiescence pattern.

An anticipatory set is accordingly the sort of thing that we generally call an idea, a conception, a judgment, or a hypothesis. I suggest that all these latter terms refer to anticipatory sets[2] as the psychological basis for their truth references; or, in other words, that wherever expressions are properly characterized as true or false the references which determine, in fact, their truth or falsity are the references which anticipatory sets consist of. An image, for instance, is not true or false except in respect to the references of an anticipatory set which supports it; and a verbal expression is not true or false, or anything but a static pattern of marks, except for the pattern of anticipatory references which underlie the marks and render them symbolic. In short, meaning as cognitive reference is in any psychological context an anticipatory set.

Now, the function of an anticipatory set in an appetition is to mediate between the drive and its quiescence pattern. It is, consequently, what is often called a *mediating judgment* or a *value judgment.* The aviator would not have gone through all the acts which he performed in order to catch a fish unless

[2] And "apprehensive sets," which have the same functions in aversions that anticipatory sets have in appetitions.

he had believed it true that a fish would satisfy his hunger. This anticipatory set, then, was a mediating judgment on which all his subordinate acts depended. If at any time he had ceased to believe or anticipate that a fish could satisfy his hunger, he would at once have stopped acting along that line of subordinate acts.

Because in its function an anticipatory set is definitely a judgment, we must not fall into the notion that it is a verbal expression. The aviator may have made a verbal judgment when the thought of a fish came into his mind at the sight of a hook and line. But we are sure that Richter's rats never literally verbalize. We are even uncertain whether they have images or not. Yet, as we saw, they behaved when they were hungry in essentially the same way that the aviator did. From whatever quarter of the living cage they were in, they took the proper sequence of steps to lead them to the feeding cage. We have abundant evidence that without words and possibly without images they nevertheless anticipate a distant goal and anticipate the sequence of acts that will bring them correctly into contact with that goal. Moreover, if an act proves incorrect, we know that rats have ways for discovering the correct act by methods similar to those the aviator would employ. In short, we see that the mediating judgment which connects the various acts of an appetition is not a verbal judgment. It is rather in the nature of a set of readinesses to act. We may possibly think of them as a pattern of open nerve paths. Whatever their physiological nature, there is no question of their existence and of their function in supplying active references for directive behavior. These active references are, as a set, the judgment proper, and are the actual entity that is true or false, correct or incorrect, in relation to the goal which the set expects to satisfy.

Accordingly, a verbal judgment is ordinarily an expression for an anticipatory set. It would be the exception rather than

the rule that a verbal expression could be identified with an anticipatory set. Ordinarily, I suggest, a verbal judgment is a little purposive act of its own, having as its goal the equating of the customary references of words with the active references of an anticipatory set. The set is the "thought" or the "idea," as we say, and we try to find the words to express it. The basic and active judgment in an appetition is, accordingly, the set itself. We try to find words to express the set as a verbal judgment only if we want to communicate it to others, or make a permanent record of it, or analyze it, or have some other ulterior reason. If the aviator said to himself, "Fish is edible," in so many words, it was not that the verbal judgment was necessary, since the sight of the hook and line probably had already set him upon anticipatory action, but rather as an afterthought in commemoration of so happy an idea. A judgment, I am saying, is primarily a set of active references, an anticipatory set, and whether or not it is accompanied by verbalization is ordinarily irrelevant to its existence.

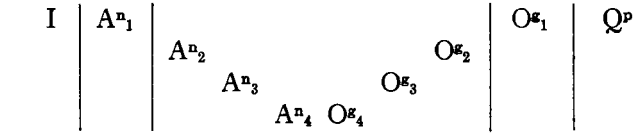
Except so far as innate readinesses are incorporated into anticipatory sets, all anticipatory sets are—as we have seen—acquired or learned. This is not a place to enter into theories of learning. But obviously any type of learning applicable to the solution of problems will be employed in the acquisition of anticipatory sets in the pursuit of goals. The most primitive and characteristic type is trial-and-error learning, which I shall treat as representative of all types. Whenever an organism is reduced to trial-and-error behavior, we may be sure that this organ is facing a gap between a present drive and a goal that is out of reach, and that it has no idea, hypothesis, judgment, or, in our terms, set of active references, in mind or in established behavior, for bridging the gap. Trial-and-error behavior signifies that an organism is in ignorance and is trying to learn a set of true references to some end.

When an organism has a correct anticipatory set, however, it is to that degree in control of the situation, and, with a drive to supply the energy, it may expect to attain its goal. The organism has, then, a drive demanding a specific quiescence pattern, and a true judgment on how to produce the quiescence pattern; it has, in short, a correct governing propensity to guide it intelligently toward achievement. The rest lies in the choice of subordinate acts.

We turn now, then, to the subject of subordinate acts.

§ 7. The Subordinate Acts

IN ORDER to attain his goal object (the fish), the shipwrecked aviator went through a succession of acts, each as a means to the next, until the goal object was attained. These acts we call subordinate acts. Each such act has its own anticipatory set and its own goal object. The anticipation in the anticipatory set is that the object of the references in the set will causally produce the next superordinate goal object, and so on, set by set and subordinate goal object by subordinate goal object, until the terminal goal object is attained—an achievement which is expected to produce the quiescence pattern and terminate the appetition. We may represent the succession and layers of subordinate acts as follows:



I = impulse pattern
A^n = anticipatory set
O^g = goal object
Q^p = quiescence pattern

An organism with an insistent drive calling for quiescence requires as many subordinate anticipatory sets as are neces-

sary to bring one of these into active commerce with a goal object which, through further active commerce of the organism, can lead eventually to the terminal goal object and the quiescence pattern. In other words, it needs as many anticipatory sets as are necessary to close the gap between the governing propensity and the goal. The subordinate acts are the acts which bridge the gap. The gap is actually bridged when an anticipatory set is actively in commerce with its goal object—when, that is, its references turn into active manipulations of the object.

Thus the gap between the aviator's desire for a fish to eat and his active possession of the fish was bridged by a succession of other desires (to pull the fish out of the sea, to hook it so that he could pull it out, to have a hook and line so that he could hook it), the last of which was actually attained, so that the aviator was in actual commerce with the goal object of the desire. Whenever a gap appears in such a series of subordinate acts, trial-and-error behavior is necessary to find the anticipatory set (and relative goal object) to fill the gap and to make active commerce with the succession of goal objects possible.

Since, as we have seen, these anticipatory sets are value judgments, active commerce with their goal objects in the expectation that the superordinate goal object will then be available constitutes a verification of these judgments. So, the activity ($A^{n}_{4}\, O^{g}_{4}$) verifies the value judgment A^{n}_{4} if O^{g}_{3} is then attained by activity ($A^{n}_{3}\, O^{g}_{3}$), and so on. The anticipatory judgment that having a hook and line in the water will lead to hooking a fish is verified if a fish is actually hooked on the line; the judgment that having a hooked fish will lead to a fish in the hand is verified if the hooked fish is brought up to the hand; and so on.

The foregoing fact gives a clue to the solution of what otherwise would be something of a problem, namely, what

precisely is the dynamics of a subordinate act. Since a value judgment is cognitively verified by the attainment of its superordinate goal object, this suggests that the attainment of a superordinate goal object constitutes the quiescence pattern of the drive for the attainment of the subordinate goal object. This fact, in turn, suggests that the superordinate anticipatory set functions as the drive for its subordinate anticipatory set. The dynamics of a subordinate act could then be presented like this:

$$\begin{array}{c|cc|c} A^n_1 & & & O^g_1 \\ \| & & & \| \\ I_2 & A^n_2 & O^g_2 & Q_2 \end{array}$$

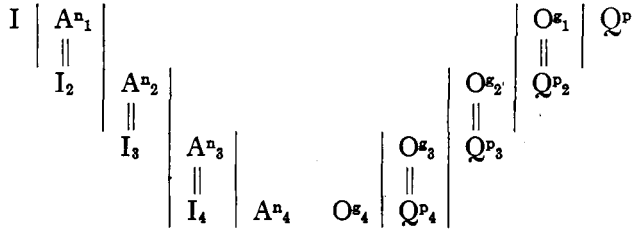
The superordinate anticipatory set (A^n_1) constitutes the impulse pattern (I_2) for the subordinate anticipatory set (A^n_2). And commerce with the superordinate goal object (O^g_1) constitutes the quiescence pattern (Q_2) of the subordinate act. Moreover, if there is a gap between A^n_2 and O^g_2 so that the organism cannot have immediate commerce with O^g_2, this subordinate act will institute its own subordinate act (A^n_3 O^g_3) to fill the gap. In short, each subordinate act is a complete appetition in its own structure, thus:

Subordinate governing propensity		Subordinate subordinate acts		Subordinate goal	
Drive	Anticipatory set			Goal object	Quiescence pattern
$I_2(A^n_1)$	A^n_2			O^g_2	$Q_2(O^g_1)$
		A^n_3	O^g_3		

So, this subordinate act has its own governing propensity complete with its own drive and anticipatory set, and its own subordinate acts, and its own double goal with goal object and quiescence pattern. Notice, too, that as long as the dynamics of this system maintains the superordinate anticipa-

tory set (A^{n_1}), this set will insist upon the attainment of its goal object (O^{g_1}). If the first subordinate goal object does not produce it (O^{g_1}), the organism will be driven to try another and another, just as the original superordinate drive insists upon its quiescence pattern, and if the terminal goal object does not produce quiescence, another goal object and another will be tried. Not until a superordinate anticipatory set is dropped will a subordinate act to satisfy it be dropped. And, vice versa, as soon as a superordinate anticipatory set is satisfied in the attainment of its goal object the subordinate set loses all its impulse. Literally, therefore, the superordinate anticipatory set is the direct source of impulse for its subordinate act.

As soon as this fact is seen, the dynamics of an appetition becomes transparent. The impulse of the original drive is simply transmitted through the references of the anticipatory sets, charging, so to speak, each successive set down from layer to layer. The impulse is then successively discharged by the attainment of each superordinate goal, until finally it is completely released in the consummatory act of the quiescence pattern. We may represent the complete dynamic structure of an appetition thus:



Here it is clearly visible how each subordinate act is dynamically clamped to the act above, and finally how the cognitive element in the governing propensity (the anticipatory set and its goal object) is embraced by the ultimate dynamic element

(the impulse pattern and its quiescence pattern). The whole structure is bound together by the drive with its conditions of quiescence which demand the specific terminal goal of its quiescence pattern.

This would complete what needs to be said about subordinate acts and, in fact, about the whole typical structure of an appetition, were it not for a phenomenon which we shall call the *independence mutation.*

§ 8. The Independence Mutation in Appetitions

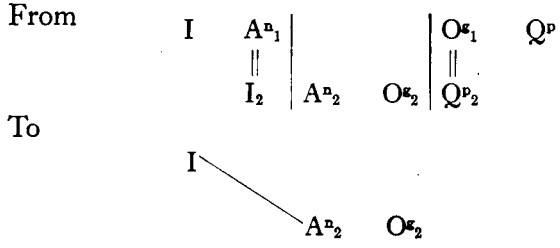
THE INDEPENDENCE mutation as it affects an appetition is generally known as the means-to-end mutation. From valuing or desiring things as means to certain ends, men often come to value them as ends in themselves. The result is what may be called derived appetitions, which have apparently some sort of derived or independent drives. The dynamics of these derived acts has been rather mysterious; indeed, recent writers might well have permitted themselves to be even more mystified about them than in fact they have been.

Examples of these mutations are plentiful enough. We want money as means, and then come to want it for itself, and some men even get to want it compulsively and are misers. We learn good manners as means, and come aesthetically to enjoy them as ends. We use words as means, and come to enjoy using them just for themselves. All tools in the hands of an expert come to be sources of immediate delight in the handling. When fishing, hiking, horseback riding, skiing, and snowshoeing are sports, they are no longer performed as means to other ends.

Yet obviously none of these activities are spontaneous or innate drives. They are obviously derived. They are, beyond much question, moreover, derived from appetitions and

consist of subordinate acts which have somehow succeeded in breaking away from their original superordinate governing propensity. Now, the problem is to account for their breaking away and, still more urgently, to account for their drive once they have broken away.

The explanation most commonly offered, though never stated with much precision, is what I shall call the *diverted impulse theory*. It may be diagrammed thus:



The idea is that the original impulse which flowed into a superordinate anticipatory set (A^{n_1}) and consequently led to the goal object of this set (O^{g_1}) gets diverted into a subordinate set, bypasses the superordinate set, and directly motivates the subordinate set to obtain the subordinate goal object as terminal. The hunger drive which stimulated a man to fish for the sake of eating gets diverted to the fishing activity itself, so that men come to desire fishing for itself without any idea of eating the fish.

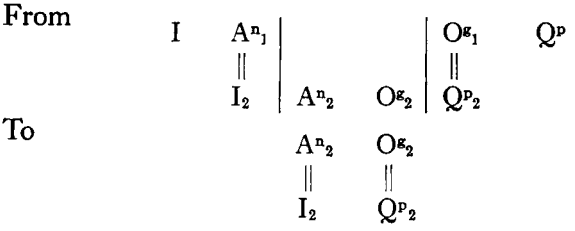
Plausible as this explanation may sound, it is self-contradictory and impossible. The hunger drive, as we know, results from stomach contractions. Without this impulse pattern there would be no desire for food, or, more specifically, for fish, if fish is the food. And conversely, if this impulse pattern is in action, nothing (barring death, fatigue, etc.) will stop the impulse until its quiescence pattern is attained, and nothing will produce this quiescence pattern except food such as fish. If, accordingly, some person should go fishing on the

hunger impulse, conceiving that the fishing activity itself would satisfy that impulse, he would not fish very long before discovering his error. Never (except by some combination of error and accident) would a subordinate act directly satisfy a superordinate impulse. If it did, it would promptly become the superordinate act itself.

Another way of indicating the difficulty is to ask what would be the quiescence pattern of a derived act on the diverted impulse theory. It cannot be the goal object of the superordinate anticipatory set, since by hypothesis that set is bypassed. Neither can it be the quiescence pattern of the superordinate act, since the goal object of the subordinate act cannot by hypothesis produce it. What, then, can it be? In fact, by hypothesis it has to be the quiescence pattern of the superordinate act, which by the same hypothesis it cannot be, since the original impulse supposedly diverted can only be satisfied by its own quiescence pattern, which only the superordinate goal object can produce. Thus the diverted impulse theory is self-contradictory and untenable.

A second suggested explanation of the independence mutation is the *ideomotor theory* (functional autonomy, as some call it). This theory goes to just the opposite extreme of the diverted impulse theory. It denies the necessity of seeking any distinct impulse for a subordinate act. Somehow an anticipatory set comes to acquire a charge on its own account and, on stimulation, goes off on its own impulse.

The ideomotor theory could be represented thus:



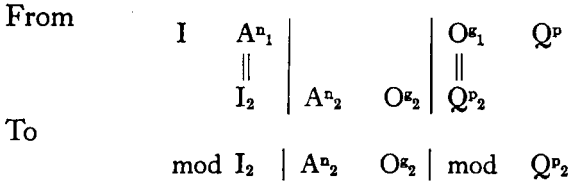
There is nothing self-contradictory about this theory; but it seems contrary to the basic dynamics of purposive activity, since in the original acts a drive is so clearly distinguishable from an anticipatory set that it seems improbable that an anticipatory set could go into action without a separate impulse. In the structure of an appetition we have seen how dependent an anticipatory set is upon the drive, how quickly it ceases to act as soon as it has performed its function of achieving a goal object which produces a quiescence pattern for the drive, and how completely an anticipatory set drops out of action and becomes impotent and forgotten when it is found in error so that it cannot satisfy the drive. It is difficult to conceive how, from this mode of functioning, an anticipatory set generates an indigenous drive.

Moreover, if an anticipatory set attains a drive of its own, on what basis could this drive vary in intensity? Yet we know that such obviously derived acts as fishing, paddling, horseback riding, mountain climbing do vary in impulse. A man's desire for these sports changes from day to day. This variation cannot lie in the pattern of references of the set, since this is fixed. If the set is autonomously charged, then, we should expect it to go off at constant intensity like a rifle or a reflex. At most, we should expect its intensity to vary only with the intensity of the stimulus. In short, on the ideomotor theory a derived act should be automatic, and not like hunger and thirst which show a variable desire for an identical anticipated object, owing to variations in the intensity of an independent drive. The crucial question is whether derived acts do not resemble in their dynamics hunger and thirst rather than automatic reflexes. If they do, this is evidence for an independent drive which is contrary to the ideomotor principle.

I am, consequently, very skeptical of the ideomotor theory. I favor what I shall call the *modified impulse theory*. In order

for an independence mutation to take place, either a new drive must become attached to the subordinate act so that the original drive becomes unnecessary, or a second drive acts upon the original drive in such a way as in part to inhibit the superordinate act and to produce what is in effect a new resultant drive with a correspondingly modified quiescence pattern. In this second alternative I am referring to the mechanisms of rationalization, sublimation, and the like. But we are not yet in a position to explain how secondary drives can produce this independence mutation. There are probably many different mechanisms for producing it. But the general principle, which, I believe, holds for all of them, is that the only way to separate a subordinate act as an independent dynamic entity from its original drive and from superordinate acts is through the impact of a second drive which modifies or cuts off the original drive. This means that the dynamics of all purposive activity has its constant reservoir in our instinctive drives, however complicated the channels through which these drives may run, or however much they may mutually combine or conflict or otherwise modify one another. This principle in its application to the independence mutation I am calling the modified impulse theory.

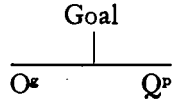
It can be represented thus:



What this means specifically for fishing, for instance, is that something has happened to the drive for catching fish, so that hunger is no longer the drive or only a small part of it, and for the new modified drive the activity of fishing itself produces the requisite quiescence pattern.

§ 9. The Goal

OF THE main segments of an appetitive act only the goal remains to be considered. But we have already said nearly all that needs to be said about that. The goal consists of two parts, the goal object and the quiescence pattern.



The goal object is the goal of an anticipatory set, the quiescence pattern the goal of the drive, and the former depends upon the latter.

There is really nothing more to be said except to be sure that one never identifies a goal object with the terminal goal of an appetition. Even so excellent an analysis as R. B. Perry's in his *General Theory of Value* identifies the purposive goal with the object of the anticipatory set, our goal object,[3] and not with the quiescence pattern. This error is easy to make if illustrations are taken from derivative acts which occupy most of the purposive life of civilized man. We want a suit of clothes, a house, a car, a promotion, membership in a club, the election of a candidate to office. In the attainment of these goal objects the purposive act seems to come to an end, and the satisfaction of the consummatory act is not apparent as a distinct terminal segment without which the attainment of these goal objects would be empty and false. Yet even in these acts it is the quiescence pattern as the satisfaction of the drive, and not the goal object as the object of the anticipatory set, that terminates the appetitive act and is its ultimate goal. An appetition is initiated with the initiation of the

[3] Perry's analysis is complicated by a doctrine of "the objective," which, in terms of our analysis, is superfluous and highly questionable. But Perry never adequately recognizes the quiescence pattern as a goal.

drive and is terminated only with the termination of the drive. A goal object is only a means of terminating a drive, and it is only the quiescence pattern of the drive that can act as the terminal goal of an appetition.

If this principle is lost sight of, one's theory of purposive value becomes false to fact and tangled in inconsistencies.

Introspectively the feeling of a quiescence pattern is what we call satisfaction or gratification. So we have satisfaction in eating after hunger, satisfaction in drinking after thirst. The satisfaction in eating, for instance, is the qualitative feel of the behavioristically describable quiescence pattern of eating and digesting food. Consequently, we say alternatively that the terminal goal of a desire for food is either the quiescence of hunger or the satisfaction of eating. But the terminal goal is not food. This is simply the terminal goal object, and any goal object that fails to bring satisfaction fails to terminate the hunger appetition. Introspectively the terminal goal of an appetition is always a satisfaction.

§ 10. Instinctive Drives

THE TERM instinct has many uses. Two of these are worth retaining, namely, (1) instinct in the sense of a chain reflex such as apparently accounts for much of the complex behavior of insects, and (2) instinct in the sense of innate purposive drives. Appetitive drives would be instincts in this second sense.

Since, on our analysis, all appetitive behavior ultimately goes back to innate appetitive drives for its dynamics, one might think that it should be a rather easy matter to isolate the appetitive instincts and catalogue them. Actually this has proved enormously difficult.

Following is a list of innate purposive drives made out by E. C. Tolman in his *Drives toward War*. Our examination of it

will prove illuminating and assist us on our way to the coming description of aversions. The whole list is reproduced, the innate aversions as well as the innate appetitions.

A. Appetitions:
- Hunger drives
- Thirst drive
- Sex drive
- Maternal (suckling of young) drive
- Nurturance (giving aid and protection) drive
- Infantile dependence drive
- Nest building and nest using drive
- General activity drive
- General exploratory and curiosity drive
- Rest and sleep drive
- Elimination drives (urination and defecation)
- Play and aesthetic drives

B. Aversions:
- Fright (injury-avoidance)
- Aggression (obstruction-avoidance)
- Gregariousness (isolation-avoidance)

A number of these items appear questionable. On principle, we should be dubious of any "general drive" for appetitions, such as Tolman's "general activity" and "general exploratory." An impulse pattern, in our analysis, is a rather specific pattern with a correspondingly specific quiescence pattern. General activity, I suggest, is the restlessness that arises from the mild arousal of any drive. Richter's rats, we recall, were restless and exhibited general activity on the stimulus of mild stomach contractions. General exploratoriness probably has a similar explanation. These are types of behavior which any drive may elicit, not distinct appetitive drives.

Play and aesthetic drives are also suspicious. This item seems to be a catchall for innate motivations not otherwise to be accounted for. The aesthetic drives we shall take up later

under the heading of "gratuitous satisfactions" and grant them a place of a peculiar sort among the instinctive appetitive drives. But most play, quite certainly, is a complex and derivative activity. A little girl who plays dolls probably has many motivations, but one of them is a maternal instinct which is not yet able to have its proper object. Similarly with a little boy who plays truck driver or locomotive engineer.

Gregariousness, moreover, is probably not an aversion. It is the infantile dependence drive with fright added. The infantile dependence drive itself may be questioned. The infant in Tolman's illustration often ran to the mother's breast. The appetitive drive in this behavior may well be a derivative from hunger, thirst, and sex, with an ingredient of fright.

And now, as to fright and aggression. These do not seem to be aversions in a sense parallel to that in which the instinctive appetitive drives are appetitive. The appetitive drives lead the organism to seek some specific type of environmental object (O^s) and correlative act (Q^p). We should expect the aversive drives to induce the organism to avoid some specific type of environmental object and correlative act. But fright and aggression do not do that. The usual stimulus for these drives is not a specific type of environmental object, but some obstruction to another drive already under way. This is particularly clear with aggression. An obstruction in the path of attainment of any appetitive goal—hunger, thirst, sex, or whatever—is the normal stimulus for aggression and its emotion of rage. But the same is equally true of fright with its emotion of fear.

Moreover, we notice that aggression and fright are the two modes of behavior possible for the handling of an obstruction in the path of a strong appetitive drive. If the obstruction can be removed or destroyed by the organism, the suitable mode of behavior is aggression; but if the obstruction is one likely to injure or destroy the organism, it is fright.

This suggests that the function of these two drives is not like that of other instinctive drives which induce an organism to seek or avoid certain types of environmental objects, but is that of *injecting* fresh energy into any activity of the organism when the specific energy of a drive may be insufficient for the task. In recognition of this function we may call them *injectives*.

My hypothesis is that injectives are neither appetitions nor aversions. They act as reserves behind the lines. They are ready to come to the support of any appetition or aversion that meets serious obstruction and, if necessary, to pour the whole available energy of the organism into the effort.

At this point one inevitably thinks of the classical work of W. B. Cannon, *Bodily Changes in Pain, Hunger, Fear and Rage*, in which he points out, among other things, this very function of the reaction of fear and rage. He furthermore points out that the bodily changes in these two emotions—in the secretion of adrenalin, addition of sugar to the blood, stopping of digestion, and sending of blood to the surface muscles—are so similar as to be evidence against the James-Lange theory of emotion, which contrasted the two emotions on the score of their opposite bodily expressions.

My own introspections on fear and rage support Cannon's conclusions and, paradoxically, the James-Lange theory also. Fear and rage are essentially the same. Though the superficial sensations are opposed, the massive internal core of these emotions remains, qualitatively, practically unchanged. In a period of rage, fear will flash in and alternate with rage, and the intestinal quality of the change will be negligible although the mode of action contemplated and the superficial imagery and sensory accompaniments differ completely. If Cannon's discoveries add anything, then, they add evidence to the essential principle of the James-Lange theory of emotion.

But the point relevant here is that fright and aggression are

not two totally different drives, but rather one drive with positive and negative phases. They are the positive and negative sides of the reserve-energy drive of the organism. They stand halfway between appetitions and aversions. They have their impulse patterns, carefully described by Cannon, and they have quiescence patterns introspectively felt as the satisfaction of triumph for aggression and the feeling of relief for fear. On the other hand, they resemble aversions in being protective rather than constructive in function. The satisfaction that comes from an injective also lacks the fullness and sensuous richness of quality that are characteristic of appetitive quiescence patterns, and approaches the mere absence of pain or of dissatisfaction that are characteristic of the end of pure riddance aversions.

I am suggesting, accordingly, that there are three rather than two varieties of instinctive drives, namely, (1) appetitive drives, (2) injective drives, and (3) aversive drives.

For the appetitive drives, Tolman's list amended as I have suggested would seem to me as good an enumeration as we can give at present. For the injective drives I list aggression and fright, the one relatively on the appetitive side of the injective, the other on the aversive side, the two standing between appetitions proper and aversions proper, but having the unique function of the release of reserve energy for emergency. A list of innate aversive drives would hardly be of any use, there are so many of them, so scattered over the body. I shall call them riddance patterns, as will be shown in the next section. A riddance pattern is to an aversion what an impulse pattern is to an appetition. We may now proceed to the structure of aversions.

§ 11. Aversions

As A WAY of entering the subject of aversions, let us take a hint from Tolman's classification of the injectives, fright and aggression, as aversions. The function of an injective is to mobilize the energy of an organism in reference to some generally noxious object or situation. In an appetition, an injective enters whenever an obstruction rises above a certain intensity. But an injective may be released on the stimulus of certain primitive reactions. Burns, cuts, blows, stings, and the like, when mild, produce what may be called *riddance patterns*. When intense, they are followed or accompanied by fright or aggression, and no one would hesitate to call such reactions aversions.

We may safely take such a reaction as an example of a typical aversion. Let us find a good illustration of such an aversion, and proceed to describe its structure.

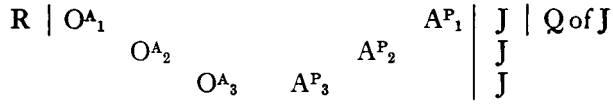
I once had a cat that jumped on the oven of a gas stove with intentions upon a platter of meat. The oven was hot. He leaped off. But not only that. He ran the length of two rooms before he stopped. Clearly he had an intense riddance reaction to the burning of his paws, accompanied with fright that carried him far out of range of the stimulus. I shall call this a simple injective aversion and diagram it as follows:

$$R \mid J \mid Q \text{ of } R \mid Q \text{ of } J$$

R = riddance pattern
J = injective
Q = quiescence

The burn on his paws induced him to jump (R), and the intensity and unexpectedness of the occurrence gave him a fright (J), which took him off the hot oven (Q of R) and carried him two rooms away (Q of J).

But the aversion that followed this act is even more interesting. Never again did the cat jump on top of the oven. The cat had learned something by the experience. He learned to avoid not merely the oven top but the whole stove, and for a while was even apprehensive about the kitchen. Here had clearly developed a new type of aversion, which may be called a simple apprehensive aversion. I will represent it thus:



R = riddance pattern
O^A = object of apprehension
A^P = apprehensive set
J = injective
Q = quiescence

The cat's withdrawal from the kitchen the next time he was tempted to enter it may be described, according to the diagram, thus: The kitchen (O^{A_3}) stimulates on sight the cat's apprehensive set of it (A^{P_3}) and directly induces the fear reaction of withdrawal (J), whereupon the fear ceases (Q of J) and the aversion actively comes to an end.

The remarkable thing about an apprehensive aversion is that the painful riddance reaction never occurs. The structure of the act is designed to keep the organism at a distance from it. This service is performed by a series of apprehensive value judgments which, described to fit the present example, would be expressed thus: The cat feared the kitchen (A^{P_3}) and acted on this fear on account of the kitchen's containing a stove he feared (A^{P_2}), and he feared the stove on account of its having an oven top (A^{P_1}) where once he so severely burned his paws that it gave him a fright. Here is a succession of value judgments similar in function to the succession of value judgments implicit in the anticipatory sets of an appetition.

And just as the anticipatory sets are correct if in fact they refer to objects which causally lead to the terminal quiescence pattern of an appetition, so these apprehensive sets are correct if in fact they are so causally connected that, responding directly to one of them, the organism avoids the noxious riddance pattern, and (if capable of precise thinking) avoids it with that margin of safety which the organism deems sufficient.

There is, however, a big difference between a series of anticipatory sets and a series of apprehensive sets. The successive anticipatory sets are, through the very structure of an appetition, constantly being tested and verified for their correctness, since in order to reach the terminal goal the whole series must be passed through. But the succession of apprehensive sets of an aversion are never tested, since the function of the series is to keep the organism at a safe distance from the pivotal act of an aversion, its riddance pattern. That is to say, the correctness of apprehensive sets is never tested through the structure of the aversion that contains them. Some other drive has to cut across the aversion and tempt the organism inside the sphere of his apprehensions in order that their correctness may be tested. It is very easy, therefore, for one to be imposed upon by his apprehensions without knowing it. Thus it was, in fact, with the cat. He did get over his fear of the kitchen, but never of the stove and the oven top. But actually the oven was often cold, and the cat thereby missed many chances at a platter of meat, to the great comfort of his mistress.

This simple apprehensive aversion which we have been studying is the counterpart for aversions of the simple anticipatory appetition which we developed as the model for appetitions. A comparison of the two diagrams shows at a glance how different the two kinds of purposive acts are. The drive for an aversion is not an impulse pattern with positive condi-

tions of quiescence determining a positive quiescence pattern (Q^P) as a terminal goal for the act, but basically a riddance pattern with purely negative conditions of quiescence, namely, the cessation of the riddance pattern (Q = mere quiescence, that is, nothing). If an injective is the drive, as in an apprehensive aversion, the same is essentially true. All that is wanted is to get rid of the apprehension. It follows that an aversion has no terminal goal in the sense of a consummatory act or quiescence pattern.

This is a fact usually overlooked, and a source of much confusion in the past, since most writers have tried to describe aversions as appetitions for negative goals. But an aversion is not in its structure an activity expressing "a want for a not-something," but an activity expressing "a non-wanting of something." The something non-wanted is the riddance pattern (introspectively the pain of the bruise, cut, sting, ache, and the like), and this it is, quite at the other end of the purposive structure, that corresponds in an aversion to the consummatory act, quiescence pattern, or terminal goal of an appetition. Some aversions do have goals, as we shall soon see, but only in a subordinate role. In its essential structure an aversion has no goal. In both of the aversions we have just studied, the simple injective aversion and the simple apprehensive aversion, no goal was represented in the diagrams. The activities terminated with the quiescence of the drives, with mere cessation of action, with nothing. The structure of an aversive purpose is not designed to attain a goal, but to avoid a harm.

I have just said that some aversions do contain goals, though in a subsidiary role. This happens whenever an organism seeks a means of counteracting some persistent object of aversion (like going to a dentist to stop a toothache), or seeks to avert some apprehended occurrence (as locking the door against a burglar), or seeks to overcome some obstacle

to escape (such as hunting for a fire escape in a burning building). Such aversions, which contain anticipatory sets and goal objects as means for the avoidance of something, I shall call *compound aversions*. They are aversions with elements of an appetition within them. I shall give diagrams of a number of typical compound aversions later, and of the simplest one in a moment.

The types of aversions thus far described have all been fully or partly motivated by injectives. Are there no aversions motivated solely by riddance patterns? Obviously there are. When a person is uncomfortable in the sun and moves into the shade, he is not apprehensive of the sun or afraid of it. He is just uncomfortable, and moves solely on the dynamics of his riddance pattern. We shall call this a simple riddance aversion and represent it thus:

$$R \mid Q \text{ of } R$$

He may have a little difficulty in attaining quiescence and be driven to some trial-and-error behavior to attain it. This could be called a simple riddance aversion with trial and error, and represented thus:

$$R \left| \begin{array}{c} \text{Trial-and-error} \\ \text{activity} \end{array} \right| Q \text{ of } R$$

An illustration would be a person looking over his car for some rattle that annoyed him.

If he knew from past experience just where the rattle came from, and anticipated that, for instance, tightening the bolt of his rear bumper would stop it, he would have a compound riddance aversion, thus:

$$R \mid \begin{array}{ccc} A^{n}{}_{1} & & O^{g}{}_{1} \\ & A^{n}{}_{2} \quad O^{g}{}_{2} & \end{array} \mid Q \text{ of } R$$

This has a superficial resemblance to a simple anticipatory appetition like the pursuit of food for the satisfaction of

hunger. But note the decisive difference that there is no consummatory act or quiescence pattern, such as the eating and digesting of food for the satisfaction of hunger. There is no final satisfaction in aversion, but only the cessation of discomfort or pain. The motorist is not seeking silence. That would be a genuine appetition if there were an impulse to seek it. The motorist nonwants the rattle. And he wants a wrench ($A^{n_2}\, O^{g_2}$) to tighten the bolt on the bumper ($A^{n_1}\, O^{g_1}$) in order to *stop* the rattle. When the rattle ceases, so does his nonwanting.

By nonwanting we mean the actual fact of negative wanting as opposed to positive wanting. We do not mean absence of wanting. Nonwanting has been so consistently overlooked and confused with some forms of positive wanting that we do not even have a name for it in our language. Just as there is positive and negative affection (namely, pleasure and pain), so there is positive and negative conation (namely, wanting and nonwanting). I shall presently have things to say about both of these in reference to the purposive structures I have been describing.

§ 12. The Independence Mutation in Aversions, and the Role of Injectives

THERE ARE independence mutations for aversions just as for appetitions. From being apprehensive of an object O^{A_2} because of its association with another object O^{A_1} which we fear, we easily come to be apprehensive of the object O^{A_2} for itself independent of its association with O^{A_1}. In aversions there is no difficulty in understanding how this mutation takes place. Its dynamics is transparent in the structure of an aversion.

If we look back at the diagram for a simple apprehensive aversion, we see that the dynamics of the subordinate apprehension as it goes directly into action on the stimulus of its

object is completely independent of the original superordinate riddance reaction from which it is derived. The injective is the drive for the apprehensive aversion; the riddance drive of the original superordinate act is designedly cut off from action. The cat withdraws at the stimulus of the stove on the motivation of fear ($O^{A}_{2}\, A^{P}_{2} \rightarrow J$) and the riddance reaction (R) is designedly cut off. An independence mutation has practically taken place in the very structure of the apprehensive aversion. All that remains to make the mutation complete is that the cat should forget the association of the stove with burned paws. There is no problem of motivation at all. We clearly see that the drive of the original act (of the simple injective aversion when the cat leaped off the hot oven) has been *modified* in the apprehensive aversion in which the cat reacted to the sight of the stove. What was a riddance + injective drive has turned into a pure injective drive. Here we have a clear descriptive observation of a modified drive explaining the independence mutation in aversions.

From

$$R\,(O^{A}_{1}\, O^{A}_{2}) \mid J \mid Q \text{ of } R \mid Q \text{ of } J$$

[Riddance reaction to hot oven in association with stove | fright | quiescence of riddance pattern | quiescence of fright]

To

$$O^{A}_{2}\, A^{P}_{2} \mid J \mid Q \text{ of } J$$

[Stove stimulating apprehensive references | fear reaction | quiescence of fear]

Here the modified drive theory of the independence mutation, which we favored earlier, clearly works. It alone works, because it is clear (1) that the new motivation cannot possibly come from the original riddance drive, since there is no heat on the paws, and (2) that it does come from the obvious drive of fear, so that the ideomotor theory does not apply.

Now I am going to venture a hypothesis in support of the modified drive theory, namely, that *whenever an independence mutation occurs, the original drive is modified by an injective.* Either the injective takes over the dynamics of the act completely, as in the independence mutation for aversions, or it takes it over in large part. The modified drive theory specifically means, on this view, that the original drive is replaced or partly replaced by an injective.

In the appetitive mutation, for instance, from fishing for the satisfaction of hunger to fishing for the mere sport of it, I suggest that the injective of aggression entered into the original act of fishing for food, and that gradually the aggressive drive took over the motivation of the act, till the hunger drive became unnecessary.

From

I	A^{n}_{1}		A^{n}_{2}	Q^{p}
	$\|\|$		$\|\|$	
	I_2		Q^{p}_{2}	
	+	A^{n}_{2} O^{g}_{2}	+	
	J		Q of J	

To

J	A^{n}_{2}	O^{g}_{2}	Q of J*

* For the satisfaction in the sport of fishing, see the next section, § 13. We are of course neglecting the gratuitous satisfaction that a sportsman fisherman gets at the side, such as the pleasures of natural beauty, country air, good exercise, etc., and we are not considering any sublimations or displacements that may be present. The motivation for any single fishing trip of a sportsman may be very complex.

In instances of sublimation, displacement, and the like, the mechanism is more complicated, but still of the modified drive type. Take the chemist with a sublimated interest in analysis of poisons and explosives, based on an unconscious infantile desire to kill his father, which desire in turn is based on an infantile sex drive for his mother. Assume the correctness of this psychoanalytic description of a certain chemist's sublimated drive. The idea of killing his father has both the sex drive and a powerful injective behind it. He is blocked in

this idea, however, by fear of his father, which actually inhibits his very thought of it. Whenever he is about to think of it, that is, the fear is stimulated, and that automatically shuts off the thought. There is no inhibition, however, on the subordinate ideas concerning the *means* of killing his father so long as the references of the means to the end are kept inhibited. Accordingly, the blocked sex drive with the powerful aggressive drive induced by the blockage finds a partial outlet and satisfaction in developing to the maximum possible the *means*, which are not inhibited from contemplation. The man is then free to study poisons and explosives as much as he wants, so long as he is inhibited from knowing why. The independent drive for chemistry in this man is, therefore, a highly modified drive. The mode of modification, moreover, becomes relatively transparent in terms of the concept of injectives. Notice that all the modifications in the original sex drive come from the operation of injectives. Fear and aggression induced on the stimulus of the frustrated sex drive react upon one another in a complication of ways which finally produce a fixated independent derived drive which largely controls the man's whole later life.

Such sublimated drives are, as frequently shown, never completely satisfying to an organism, since they are based on a frustration which persists. The simpler modified appetitive drives, of which we were first speaking, however, may be considered as clear gain and so many the more sources for satisfaction for us. Much of our enjoyment of art is made up of these, and many of our ordinary comforts about the house.

But whether simple or complicated, whether from aversions or appetitions, my hypothesis is that all independence mutations are to be accounted for by the modified drive theory and that specifically the modification is always made by injectives. I question the psychological possibility of any form of ideomotor theory.

§ 13. The Injective as a Spontaneous Drive

I HAVE been assuming up to this point that an injective is like a riddance pattern and has no consummatory act or quiescence pattern. It seemed better to allow this assumption to pass at first, so as to make the contrast between an aversion and an appetition as strong as possible. There is, however, clearly a positive satisfaction intrinsic to successful aggression. It shows itself in the feeling of triumph and exhilaration that comes after a hard-won victory. We also recognize a quiescence pattern for fear in the feeling of relief that follows when the anxiety is over. These consummatory satisfactions for the injectives, however, do not possess the sensuous fullness of satisfaction that are characteristic of the appetitive drives—hunger, thirst, sex, and the others.

But it does bring it about that any injective aversion in fact possesses a quiescence pattern in virtue of the injective, which is another reason why the structure of aversions has been so consistently confused with that of appetitions. An injective, however, is not an essential part of any aversion. It is an interpolated element like the anticipatory sets in compound aversions. The pivotal element in an aversion is always the riddance pattern, and for this there is literally no positive quiescence pattern, but only mere quiescences.

There is also another fact about injectives that needs to be noticed. In general they come into action only on the stimulus of other drives. But aggression and even mild fear may go off spontaneously. At least, it would be difficult to explain certain rather common acts on any other basis. When an organism is well rested and in high spirits, it "lets off steam," looks around for things to do, "seeks worlds to conquer." Apparently, when the reserve energy of the system rises above a certain threshold, it demands release and satisfaction spon-

taneously. An injective drive, in short, behaves then like an impulse pattern of an appetition. It actually is an appetition with a quiescence pattern of triumph over opposition, and with subordinate acts to provide adequate opposition as a means of achieving a triumph.

Here the normal role of an injective gets reversed: what we have is not an injective in the service of an appetitive drive to carry the appetition through under opposition, but an appetitive drive in the service of an injective to supply a goal which can be sufficiently blocked to produce a good triumph. Originally, no doubt, farmers wanted to catch a fox in order to have chickens to eat, and the injective of aggression augmented a hunger drive to give the farmers energy to go over fences and ditches and through fields and woods till they caught the animal. But, later, spontaneous aggression seeking an outlet looks around for a fox to chase in a country with plenty of fences and ditches and fields and woods to use up this energy and be a means for creating a respectable triumph.

The surplus energy theory of play, associated with Spencer and others, was banking on such facts as these. But a good deal of play also involves sublimation, which is a very different thing from spontaneous high spirits looking for goals with big enough obstacles to be worth conquering. Of course, spontaneous injective activity and sublimation can go on together. In most sports, they probably do. Moreover, a simple independence mutation from some original appetition will account for a lot of play.

Such spontaneous aggression as we are describing here must not be confused with the action of a bully in tormenting a weaker fellow. This is a displacement mechanism. The bully has himself been bullied by somebody he did not dare retaliate upon, and he takes it out on somebody weaker. This is not spontaneous injective activity (the connotations of "aggression" do not, unfortunately, spontaneously cover spon-

taneous "high spirits"). This bullying activity is aggression against bitter frustration, but it is displaced. The point about spontaneous injective activity is precisely that it is not based upon the frustration of some other drive, but spontaneously wells up, and the term "high spirits" is precisely descriptive of it.

A society is fortunate in which a lot of high spirits exist, for it indicates freedom from excessive frustrations and surplus power to handle emergencies. But occasions must be provided which will use up these surplus energies harmlessly, for if they are not properly canalized they can produce a quantity of breakage. It is in the very nature of an injective that no specific class of terminal goal objects will produce its quiescence pattern. *Any* resistance sufficient to use up the injective drive and yet be overcome will do. Consequently this drive is less controlled by environmental conditions than any other. It has no obvious and specific biological function, as hunger has. It therefore seems useless to social authorities such as parents, schoolteachers, and officers in civil or military organizations, and is a nuisance to them, and is consequently likely to be suppressed by them by discipline. That is, sufficient actual frustrations are produced to use up the injectives, so that there will be no spontaneous aggression. This is not, however, as clever a solution as it appears, for an *arbitrary* authority who uses unnecessary discipline is playing the role of a bully, and the aggression he suppresses by fear will come out displaced on some next weaker fellow, who will carry the chain of displaced aggression to the next, and so on down, producing the characteristic disciplined society of which imperial and Hitlerian Germany was an object lesson.

There is little doubt that our moral and social problems have chiefly to do with the proper handling of the injectives, fear and aggression. The concern of moralists and theologians with our appetites and carnal passions is misplaced.

Hunger and thirst and sex and the other appetitive impulses can probably be trusted to take care of themselves, just as we generally trust our riddance patterns to take care of themselves. No one dreams of artificially trying to block a drive to stop a toothache or a stomach-ache. There is probably just as little reason to try to restrain eating, drinking, or sex. The appetitive impulses themselves appear to be relatively self-regulatory. What does need constant watching is the impulses of aggression and fright which are induced by the frustration of these appetitive drives and which may inflate them to exaggerated dimensions.

From the parent to the legislator and judge we need to know all we can learn about the handling of these injectives. Iron discipline is not the answer; it only increases them or forces them underground to come up in vicious unexpected ways. Complete unrestraint is not the answer, for there are realistic problems of conflict of man with man in which frustrations are inevitable and have to be intelligently adjusted to. The answer is a delicate and serious one and needs much careful study.

This conclusion that the control of injectives is the great social and ethical problem is the more evident if we consider it in the light of the hypothesis offered in the preceding section, namely, that all independence mutations are probably brought about through the partial or complete substitution of an injective drive in place of the original appetitive or riddance drive. When we consider the amount of our civilized living that goes on in terms of derived acts, the role of fear and aggression in our society becomes staggering. A wise and farsighted handling of our injectives would appear the most direct means of attaining a self-controlled society. This means, in principle, providing our appetitive drives with normal satisfaction so that excessive frustration, leading to derived drives with fixated exaggerated injectives, does not occur.

§ 14. A Definition of Purpose

WE ARE now ready to formulate a detailed definition of purposive activity. Our method will consist in gathering together into a list the diagrams of typical structures of appetitions and aversions, and resolving that the term "purpose" shall indicate the field of behavior described by these sample diagrams so far as these diagrams are true descriptions of this field. In short, the term "purpose" is tentatively equated with this list of diagrams. But it is understood that these analyses are subject to correction in terms of the facts of behavior they refer to, and that they represent only sample structures in a field of behavior having many variations from the samples given.

I will give the list of typical sorts of aversions first, since we have worked these out in greater detail in the preceding section, and follow this with a correspondingly detailed list of appetitions. I suggest the following:

AVERSIONS

1. Simple riddance

Riddance pattern	Quiescence of riddance pattern

2. Simple riddance aversion, with trial and error

Riddance pattern	Trial-and-error activity	Quiescence of riddance pattern

3. Compound riddance aversion

Riddance pattern	Anticipatory set	Subordinate acts	Goal object	Quiescence of riddance pattern

4. Simple injective aversion

Riddance pattern	Injective	Trial-and-error activity, if necessary	Quiescence of riddance pattern	Quiescence of injective

5. Compound injective aversion

Riddance pattern	Injective	Anticipatory set	Subordinate acts	Goal object	Quiescence of riddance pattern	Quiescence of injective

6. Simple apprehensive aversion

Riddance pattern	Subordinate apprehensions		Apprehensive set	Injective	Trial-and-error activity, if necessary	Quiescence of injective
	Subordinate object of apprehension	Subordinate apprehensive set				

7. Compound apprehensive aversion

Riddance pattern	Subordinate apprehensions		Apprehensive set	Injective	Anticipatory set	Subordinate acts	Goal object	Quiescence of injective
	Subordinate object of apprehension	Subordinate apprehensive set						

Illustrations of Aversions

1. Simple riddance: Brushing a mosquito from one's hand.
2. Simple trial-and-error aversion: The mosquito keeps coming back, and one act after another is tried to get rid of it, until it flies away.
3. Compound riddance aversion: The mosquito keeps coming back, and one generates the anticipatory set of killing it. The goal object is a dead mosquito, and one frames a series of subordinate acts to lure the mosquito to a spot where one can strike it.
4. Simple injective aversion: Wasps sting a man, who shakes them off and runs out of the swarm's vicinity.
5. Compound injective aversion: Wasps sting a man, who shakes them off, but the wasps follow, and the man thinks of escaping them by getting into the house and acts accordingly.
6. Simple apprehensive aversion: A man hears a nestful of wasps, and, being apprehensive, gets out of range.
7. Compound apprehensive aversion: A man finds a nest of wasps in his attic and anticipates that he can smoke them out with a smudge and acts accordingly.

APPETITIONS

1. Gratuitous satisfaction

Conditions of quiescence	Quiescence pattern

2. Simple trial-and-error appetition

Drive			Trial-and-error activity	Quiescence pattern
(*a*) Impulse pattern	(*b*) Conditions of quiescence	(*c*) Innate readinesses		

3. Compound trial-and-error appetition

Drive (a) (b) (c)	Trial-and-error activity	Injective	Quiescence of injective	Quiescence pattern

(The injective may enter upon the stimulus of any blockage of the drive, and the quiescence of the injective may be delayed till the advent of the quiescence pattern or even later)

4. Simple anticipatory appetition

Governing propensity		Subordinate acts		Goal	
Drive (a) (b) (c)	Anticipatory set	Subordinate anticipatory set	Subordinate goal object	Goal object	Quiescence pattern

5. Compound anticipatory appetition

Governing propensity		Subordinate acts				Goal	
Drive (a) (b) (c)	Anticipatory set	Subordinate anticipatory set	Injective	Subordinate goal object	Quiescence of injective	Goal object	Quiescence pattern

(See note under "Compound trial-and-error appetition," item 3 above)

ILLUSTRATIONS OF APPETITIONS

1. Gratuitous satisfaction: Any unanticipated satisfaction, such as an odor, a rainbow, a breath of fresh air, a compliment, a gift.
2. Simple trial-and-error appetition: A thirsty man in unfamiliar country (or city) looking for water. A man who has mislaid his key trying to open his trunk. Rats learning a maze.
3. Compound trial-and-error appetition: Same as above with fear or aggression added, as when the man trying to open the trunk begins to get irritated.
4. Simple anticipatory appetition: The thirsty man anticipates finding water in a gully and acts to reach it. The man with the refractory trunk seeks a locksmith.
5. Compound anticipatory appetition: Same as above with fear or aggression entering in. The thirsty man finds the gully dry and redoubles his efforts to find water in the next valley.

Only one of these structures on the appetitive list has been worked out in the previous sections—namely, the simple anticipatory appetition,—though the others have at one time or

another been alluded to or implied. The compound anticipatory appetition has the same structure as the simple anticipatory appetition, with the addition of an injective. Since injectives normally arise in appetition from a severe blockage in the attainment of a goal, and such a blockage is inevitably in the nature of a riddance pattern or apprehensive set, it follows that the presence of an injective in an appetition is evidence of elements of an aversion there. Such an appetition is, therefore, compound, in the same way that an aversion with anticipatory sets is compound. In short, whenever an anticipatory set enters into an aversion structure, or an injective into an appetitive structure, the purpose will be called compound.

Since anticipatory sets are learned, there are bound to be appetitive structures that are lacking in anticipatory sets. When these consist of a drive inducing trial-and-error behavior for the attainment of a goal, we may call them trial-and-error appetitions. It is not that trial-and-error activity does not also occur upon blockages in anticipatory appetitions, but that trial-and-error stands out most prominently in these simpler appetitive structures, and so we are calling them by this name. If an injective enters into a trial-and-error appetition it becomes compound.

The one surprising and controversial item in the list is probably the gratuitous satisfaction. This consists in any satisfaction that comes unsought: the pleasant bubbling of a brook, a sweet odor, a cool breeze on a hot cheek, a luscious color of insect, bird, or flower, ripples on the sand. Being unsought, how are these appetitive?

There are several reasons for including them within purposive value, which all come down to the fact that it would be arbitrary to exclude them. Gratuitous satisfactions are in the same status in respect to appetitions that solitary riddance patterns are in respect to aversions. When a riddance

pattern is unsuccessful and has to be supplemented with trial and error, there is no question that we are observing a purposive activity and that negative purposive value accrues to the object of riddance. It would be absurd, then, to deny purposive value to a riddance pattern that goes off successfully by itself without supplementation. This point is the more convincing when we realize that the riddance pattern is the pivotal act about which all aversions are organized.

Now exactly the same considerations hold for the gratuitous satisfactions. When our skin is hot and we make subordinate acts to find a breeze to cool it, there is no question that the activity is purposive and that the cool wind on the cheek is a consummatory act yielding positive purposive value or satisfaction. If, then, the wind comes unsought and we have gratuitously the satisfaction of the consummatory act, there is just as much satisfaction, just as much consummatory value. And note that the structures of all appetitions are organized solely for the attainment of this pivotal act. A gratuitous satisfaction is a consummatory act that needs no supplementation for its achievement. It is the terminal goal given without the necessity of the seeking.

If the sphere of purposive activity is to be inclusive of all purposive values, it would be arbitrary to exclude from it successful riddance reaction and gratuitous satisfaction; for, when we come to comparing the values of purposive acts, gratuitous satisfactions will be as relevant as the terminal satisfactions of complex appetitions. I believe that the inclusion of simple riddance reaction and gratuitous satisfaction is, moreover, merely following the evidential demands of the structures we are describing. In *fact*, men who are making purposive evaluations with a view to future conduct do include gratuitous satisfactions, as well as sought-after goals, as positive and comparable values. A businessman has been known to sacrifice a week of potentially good sales for a week

at the seashore in the expectation of finding certain gratuitous satisfactions. Here he wants these satisfactions. But he wants them only because he found them gratuitously satisfying at an earlier time. A gratuitous satisfaction is treated in the comparison of goals just like a goal itself, and such it actually is without the need of being striven for. It could not be excluded from the sphere of purposive values without doing violence to the descriptions of purposive behavior within areas where no question of relevancy could arise.

It is probable, moreover, that there is a tension, or readiness to reaction, as a condition for these satisfactions, but the tension is below the level of consciousness and is not noticed until it is released by suitable stimulation. These tensions would be in the nature of subliminal drives not ordinarily brought into action except by external stimulation inducing immediately the consummatory act. They would constitute, so far as they are innate, a special group of instinctive drives. We may call them the gratuitous satisfaction drives; as such, they were given recognition in the list of appetitive instincts.

As subliminal tensions localized all over the surface of the body and ready to go off on external stimulation, these gratuitous satisfaction drives resemble riddance patterns. But their action on stimulation is entirely different. A riddance pattern, on stimulation, does not release its tension, but rather augments it until the object of riddance is disposed of and the action ceases; whereas a gratuitous satisfaction does not exhibit avoidance of its stimulus, but on the contrary keeps the stimulus present as long as possible and until the energy of the reaction runs out.

I offer, then, the whole list of diagrammatic representations of sample structures of appetitions and aversions as a descriptive definition of purpose and as demarcating the factual field of purposive behavior. This definition entails some modifications of our first rough definition in section 1, and is, I believe, a much closer approximation to the facts.

§ 15. The Definition of Purposive Value

HAVING now constructed a descriptively justifiable definition of purpose, and having determined at the very beginning of this study that values were contained in purposes, we should now be in a position to define purposive value. This may be done by simply declaring that *positive and negative purposive values are the positive and negative features contained in purposive activity;* or, more specifically, *whatever is intrinsically positive or negative in appetitions and aversions is positive or negative purposive value, respectively.* By "intrinscially" shall be meant "contained in or implied by."

For instance, wanting food is a positive feature in a hunger appetition, and accordingly is a positive purposive value. Avoiding a hot stove is a negative feature in an apprehensive aversion, and so is a negative purposive value.

It follows that purposive values are facts. This will be no surprise to some writers on the subject, but there are still many who deny that values are facts, or who appear to do so. The relation between purposive value and fact is exactly like that between magnetic attraction and fact. Magnetic attraction is a kind of fact, and so is purposive value.

Of course, a fact must be distinguished from a description of a fact or a proposition about it. But there is nothing unusual about that. A description of magnetic attraction is distinct from the fact of magnetic attraction and has a certain relation to the fact. Similarly, a description of wanting something is distinct from the wanting of it. The one is a description of a purposive value, and the other is the being of this value in fact. Moreover, a description of an anticipatory set (an anticipatory set being, in effect, an organism's act of judging what he wants) is distinct from the fact of an anticipatory set in action. A description of a shipwrecked aviator's

act of judging that he wants a fish to satisfy his hunger is distinct from the aviator's act of judging that this is what he wants. The latter judgment is a factual feature of the aviator's valuing act; it is a mediating value judgment within the act described. But the judgment describing the act is outside the act described. It is a descriptive judgment of a judgment. The anticipatory judgment in its setting within an appetitive purpose is not only a judgment but a value and one of the means to the final goal. It is both a judgment and a value in fact. The anticipatory set is a value precisely because it is a judgment *in fact* mediating the achievement of satisfaction for the hunger drive. None of these relations needs to be confusing. But it is owing to a failure to trace out these relations faithfully that many writers have been led to contrast fact and value, as if a value could not be fact. Value is a kind of fact.[4]

Having now got our general definition of purposive value as whatever is intrinscially positive or negative in appetitions and aversions, the next thing to do is to find out precisely what positive and negative features lie within these purposive structures. And here we come to the point where for greater precision we shall find it advisable to pass from a predominantly behavioristic treatment of the subject to a predominantly introspective one. In the descriptions of the structural framework of purposive activity, behavioristic materials have proved most fruitful. But for the detailed filling within these frames, behavioristic observations are not very helpful. They are too coarse, except as a general check. Physiological data are not very helpful as yet, either. Our

[4] Some writers seem to think that the judgment "I like *x*" is to be distinguished from a proposition such as "A weighs 175 pounds." The former is supposed to be an indication of an "emotive" event, or even the "emotive" expression itself and so neither true nor false, and not a proposition. To clear up this peculiar confusion, all one needs to do is to distinguish between an act of liking and a statement about it. The former is, of course, an act and, like any factual occurrence, neither true nor false; but the latter is a statement about an act and may well be false, and accordingly is a proposition. I may well be mistaken in a statement of what I like.

best information about the region of human action lying between the frontiers of neurology on the one side and those of behavioristic psychology on the other is in large part introspective. It would be absurd to ignore this source of information. Actually, it is quite reliable when carefully checked against itself and fitted into the structures developed from behavioristic data.

Now it is obvious that, on the whole, an appetition is positive in its structure, and an aversion negative. We are likely to say that an appetition is headed for its goal as its positive object of value, and an aversion is getting away from its riddance pattern as its negative object of value. Ultimately, we shall come back to this conception as the essential truth about purposive values. But there are contained in purposive structures a great many contributory values that have to be passed in review first before we can see this basic conception in its proper proportions.

To begin with, there is no one who would not say of a man lost in a blizzard that the quicker he could find his way out the better. He is cold and afraid, and every moment in the blizzard adds more to his suffering. The sooner he can escape and have quiescence the better. The less the duration of an aversion the better. Since an aversion is a negative purposive structure, this is what we should expect.

Should we not correspondingly expect, then, that since an appetition is a positive purposive structure, and the opposite of an aversion, an opposite principle would hold, and so the longer an appetition can last the better? But here we meet conflicting evidence. The hungry shipwrecked aviator seems to be as eager to obtain his fish and eat it as the man lost in a blizzard is to get out of the cold. Apparently, the shorter an appetition lasts the better, too. And yet, on the other hand, in eating a dinner we often try to make it last as long as we can. Often we hate to come back from a dance, hate to stop

reading a novel, or to turn off the radio. So again, in some appetitive acts the longer they last the better, as would have been expected.

Clearly the value relations in these purposive structures are not of a simple sort. Besides the peculiarities just pointed out, there are others that we have already seen. Compound appetitions contain blocked segments with negative values in them inducing injectives, and compound aversions draft in segments with appetitive goals that have positive values. There are negative values in many appetitions and positive values in many aversions.

To handle these complexities, we are led to the recognition of two new hypotheses. The first I shall call the *distributive principle*. This is the principle that values are distributed among the segments of a purposive structure, and that the value involved in the total activity is found by gathering up the values of its segments. The principle contravenes a very common assumption that somehow purposive value is to be conceived as concentrated upon the goal. By the distributive principle, value spreads over the whole act; and every segment of it, as well as the terminal segment, or goal, requires consideration.

The second hypothesis is that there are several different kinds of values within a purposive structure. This is not to exclude the possibility that in the end they may all reduce to one. But it is definitely to restrain us from assuming reducibility prior to observation.

I seem to find three different grounds of positivity and negativity within purposive structures. These would (unless reductive correlations can be found) generate three corresponding kinds of purposive value. The only empirical procedure is to accept the hypothesis that there are these three kinds of value within purposes, and not try to interconnect them except so far as the facts of purposive behavior themselves indicate connections.

The three kinds of positivity and negativity (i.e., value) that I find within purposive structures are: (1) *pleasure vs. pain* (or *affection*), (2) *wanting vs. nonwanting* (or *conation*), and (3) *success vs. frustration* (or *achievement*). We shall consider each of these in turn.

§ 16. A Theory of Affection, and Affective Value

IN THE preceding sections we have said little about pleasure or pain, though there has been plenty of evidence of their presence in aversions and appetitions. In this section I shall offer a theory of affection, which incidentally will include also a theory of conation. The two can hardly be kept entirely apart, though attempts to define the one in terms of the other, such as the idea that pleasure is unfrustrated and pain frustrated conation, can quickly be shown inadequate. A riddance pattern is painful, but it is not a frustrated conation. It is a spontaneous negative conation. And although the frustration of an extended aversion increases its unpleasantness, its nonfrustration is rather just the absence of more unpleasantness than a positive pleasure. The relations between conation and affection are more complex than that of the presence or absence of frustration.

Let us begin by noting that, on the basis of our analyses, conation in the form either of wanting or nonwanting is present in every segment of an appetition or aversion. For wherever there is a drive, there is either positive or negative conation, either a wanting or a nonwanting of something. And in all purposive activity there is a drive.

Also, once the idea is given that pleasures and pains are facts to be noticed for themselves within purposive structures, it is clear that these are widely distributed through purposive structures, too. Riddance patterns are the very models of painful occurrences (burns, bruises, cuts, aches, and

the like), and quiescence patterns are the very models of consummatory pleasures (eating, drinking, and sex love). Pain or displeasure is also associated with apprehensions and blockages and so is widely distributed through the inner segments of purposive structures. And pleasures are associated with the achievement of goals and so enter into every successful subordinate act.

Affection and conation do not, however, always vary in the same way in respect to each other. The most significant discrepancy appears in the quiescence pattern of an appetition. Here the appetitive conation has reached its goal and is in process of diminishing. In the consummatory act of eating for hunger or having an orgasm for sex, the wanting is rapidly declining in intensity, but this is just when the pleasure is at its height.

The hypothesis may well suggest itself that the relation between the two is an inverse one. This idea can be given content through a concept of *tension* which has been much used in recent discussions of such matters. The hypothesis, then, is that increase of tension gives pain and release of tension gives pleasure.

This hypothesis seems to me almost tenable, but not quite. The difficulties appear when the actions of riddance patterns and impulse patterns are carefully observed. In a riddance pattern the greater the tension as shown in general in the energy of reaction, the greater the pain. So far the hypothesis works. But the release of tension in a simple riddance aversion, as we have repeatedly seen, is not a pleasure, but mere quiescence, a mere ceasing of pain. And whereas release of tension in an impulse pattern gives pleasure, mild tensions yielding feelings of fairly intense wanting do not feel painful. Moderate thirst and hunger are not at all painful.

I suggest, then, the following modification of the tension theory of conation and affection, which is nothing more nor

less than a summary of the evidences indicated in the last few paragraphs. I suggest that increase of tension is directly correlated with increase in conation and, correspondingly, decrease in tension with decrease in conation. Then I suggest that for every drive there is a critical pain threshold. Increase of tension above that threshold is correlated with increase of pain. Increase of tension below the pain threshold has no affective value. Release of tension from above the pain threshold is correlated with decreased intensity of pain. Release of tension from the pain threshold down, however, yields pleasure. These relations can be seen at a glance in the accompanying table.

RELATIONS OF TENSION, AFFECTION, AND CONATION

Tension	Affection	Conation
Increase of tension above pain threshold	Increasing pain	Increasing conation
Increase of tension below pain threshold	Neither pleasure nor pain	Increasing conation
Decrease of tension from above pain threshold	Decreasing pain	Decreasing conation
Decrease of tension from pain threshold down	Pleasure	Decreasing conation

From the table, the distribution of pleasures and pains in the segments of purposive structures can easily be worked out. In riddance patterns the pain threshold is apparently always at zero intensity, so that any intensity of riddance is unpleasant and with increase of intensity rapidly becomes very painful. Any blockage in the progress of a purpose is produced either by an object of riddance or an object of apprehension, and consequently is unpleasant.

The aptness of this theory of affection, however, shows up

particularly in appetitions in the handling of impulse patterns and quiescence patterns. On this view, the pain threshold of an impulse pattern is at a rather high intensity. Mild thirst is not painful although, owing to the tension, an appreciable degree of desire may be present. There is no pleasure, either, for there is no release of tension. With mild thirst there is eagerness to get to the drink, and the sooner the better, but once the drink is obtained, the longer the drinking the better, for it prolongs the pleasure.

This view, therefore, accounts for the fact (otherwise paradoxical and unexplained) that an organism will seek to reach its terminal goal as quickly as the intensity of its drive will press it, until it reaches the consummatory area, whereupon (if the drive is not too intense) its behavior will slow down. If the conative action of the drive were the only factor governing the activity, the quiescence would be sought in the quickest time possible for that intensity of drive—just as does happen in aversions. But the pleasure factor in the release of tension of an impulse pattern below the pain threshold holds back the conative urge so as to extend the consummatory act. With experience, and if no other desires are pressing, an organism tends to extend this consummatory act to a maximum so as to obtain the largest possible yield of pleasure. Aesthetic values have their source in this consummatory behavior.

And now take the behavior of an extremely thirsty man. The intensity of the drive has pushed the impulse above the pain threshold, and the longer the thirst is unquenched the greater the pain. When water is finally obtained, the behavior of this man is to gulp down the first two or three cups of water for relief from the pain, but after that, when the release of tension below the pain threshold is reached, the last cup or two he drinks slowly and with enjoyment. On our view, this peculiar behavior is also explained.

Besides the pleasure in these terminal consummatory acts

of an appetition, there is also a certain amount of pleasure upon the attainment of subordinate goal objects, especially if these have been singled out and aimed at for some time. A little tension seems to be released at such times, yielding a minor consummatory act with attendant pleasure. Pleasures of this sort may be had even in aversions of the compound sort through release of an injective drive below the pain threshold.

This theory of affection seems to account satisfactorily for the distribution of pleasures and pains through purposive structures, and particularly for the special concentration of pain on the focal segment of an aversion (its riddance pattern), and of pleasure on the focal segment of an appetition (its quiescence pattern).

§ 17. Conative Value

AFTER the preceding section, little further needs to be said about conation except to specify a little more precisely what constitutes positive and negative conation (wanting and nonwanting). These depend on the references of the drive. The references of an anticipatory set, for instance, are positive, and directed upon a goal object. A drive channeled through an anticipatory set would, accordingly, be a positive conation for the goal object (a wanting of that goal object). A drive channeled through an apprehensive set would be a negative conation (a nonwanting of the object of apprehension).

For convenience, all the different kinds of references with their objects and their sources are displayed in the accompanying table (see next page).

From our previous analyses, we can see that conative references are very diverse. Those for anticipatory and apprehensive sets are of the sort generally called "cognitive." Those for an impulse pattern are the conditions of quiescence, a

causal property of the drive. Those for a riddance pattern are the acts of riddance in actual commerce with the object of riddance. The normal function of injectives is to intensify the conative values of the drives they support, but as impulses in their own right they behave like impulse patterns or riddance

KINDS OF REFERENCES, WITH THEIR OBJECTS AND SOURCES

Segment	Nature of references	Sign of the references	Object of reference
Anticipatory set	Cognitive	Positive	Goal object
Impulse pattern	Positive conditions of quiescence	Positive	Quiescence pattern
Apprehensive set	Cognitive	Negative	Object of apprehension
Riddance pattern	Acts of riddance	Negative	Object of riddance
Aggression (as spontaneous drive only, cf. §13)	Positive conditions of quiescence	Positive	Triumph over obstacle
Fright (as spontaneous drive only, cf. § 13)	Positive conditions of quiescence	Positive	Relief from object of fright

patterns. The variety of these references shown in our descriptions of purposive acts will serve as a caution to writers on value who are tempted to restrict conative references to one type only—usually the cognitive.

A comparison of this table of positive and negative conation with that of positive and negative affection will show that these values are sometimes divergent with respect to the same object or segment of an act. When there is tension above the pain threshold in an impulse pattern, we have positive conation with negative affection. An extremely thirsty man is in pain and positively wants his thirst satisfied. The expression "He wants it badly" aptly fits the situation. When there

is tension below the pain threshold, there is positive conation and neither pleasure nor pain. A mildly thirsty man wants a drink, but without either pain or pleasure. Decrease of tension from the pain threshold down produces decreasing positive conation and at the same time increasing, or at least steadily intense, pleasure.

I suggest that these cross-values of conation and affection relative to the same purposive segments are actually what happen. A theory of value that does not note these discrepancies of evaluation and take account of them is not fully meeting the problem of value.

§ 18. Achievement Value

ACHIEVEMENT is different from wanting, and consequently achievement value is to be distinguished from conative value. Positive achievement is the attainment of a purpose, whether the purpose be an appetition or an aversion. In an appetition it is the attainment of a goal. In an aversion it is the avoidance of an object of riddance or apprehension. Negative achievement is frustration or failure to attain a purpose.

Full achievement is the attainment of the terminal goal in an appetition or of complete avoidance in an aversion. Partial achievements are attained along the way, however, in the attainment of each segment of a purposive structure. The attainment of any subordinate goal is so far an achievement, and also the avoidance of any frustrating object met along the way.

It does not follow, however, that achievement value can be increased by multiplying obstacles and subordinate goals. This would signify that the most roundabout way of reaching one's purpose would yield the greatest amount of achievement. On the contrary, the quicker and the more economically a goal is attained the greater the achievement. The only

exception is in sports, and games, and tests of capacity in which the goal is to show how much you can do. But even here the better achievement is the one that shows this maximum capacity most economically under the artificial conditions of obstruction. Someone has defined golf as a game in which one places a very small ball in a very small hole with an instrument totally unsuited for the purpose. Yet, under these extraordinary conditions, the best golf player is the one who gets the ball in the hole with the least number of strokes.

It follows that a roundabout route unnecessarily taken is a partial frustration and cuts down the achievement value. An organism seeks to avoid a roundabout route just as much as any other sort of blockage in the way of attaining a goal or avoiding an object of riddance.

Now that we have these descriptions of the three kinds of value that appear in purposive structures—namely, affection, conation, and achievement—we are almost ready to discuss the standards for the evaluation of these. But one important topic still requires to be taken up before we are quite prepared for the final subject of evaluation. This is the topic of the object of value.

§ 19. The Actual Object of Value

THE TOPIC of the object of value is probably the most obscure of all the obscure topics of value theory. It is the more so because it seems simple and is often treated in that spirit, whereas actually the topic is extremely complex. For instance, many writers today following R. B. Perry define value as a relation between two terms, one of which is a so-called "interest" and the other an "object." Value = (I) R (O).This definition begs, at the start, the question whether there may not be value without an object. But, apropos of our present topic, this definition gives the impression that the "object" is

perfectly transparent to analytical observation. Perry, to be sure, is well aware of the complexity of this problem. But most writers accepting the interest definition of value give the impression that there may be some problems in identifying "interest," but that, once "interest" is specified, the object of an interest is perfectly obvious. Nothing could be further from the case.

This section and the next give a summary of my own analysis of this intricate subject. Criticisms of other views will be implicit in the analysis.

The first thing to do in order to bring clarity into this topic is to make a definite distinction between an *actual object of value* and a *potential object of value.* An actual object of value is one that exists at the time and in the place where the valuing is going on. The valuing going on can thus be observed as directed upon or as accompanying the object about which it is going on. Both the object and that which endows the object with value must exist at the same time with some active transaction going on between them which constitutes the endowing of the value, in order that the relation *actual object of value* shall hold.

By contrast, a potential object of value is one that does not yet exist at the time when the activity which endows it with value exists. In the relation *potential object of value* one of the terms of the relation exists and the other does not. For instance, a house that is being planned or is in process of construction is a potential object of value for the person who anticipates living in it. It does not yet exist. But the anticipation of it which endows this potential object with value does exist, and must exist, in order for this potential object to have that value. When the house is completed and the owner is enjoying occupancy, then the house becomes an actual object of value. It follows that any goal prior to attainment is in the status of a potential object of value, and is not an actual

object of value. This point is rarely brought out clearly, and it is essential to an understanding of the role of an object of value in purposive action or in evaluation.

In this section we will restrict ourselves to describing actual objects of value. Let us begin with the actual objects of conative value. What is the actual object of wanting or of nonwanting? Our first thought would probably be that it is the object of conative reference as this is indicated in the table in section 17. On this basis the actual object of a positive conation with positive references directed upon a goal object would be the goal object. But, as we saw in the last paragraph, this solution is impossible since the goal object does not yet exist when it is the object of anticipation. It may, in fact, never come into existence, being unattainable like Ponce de León's Spring of Life. A goal object previous to attainment is never an actual object of value, but is a potential object of value. The same will be true of all the other objects of reference in the table of positive and negative conations. None of those objects can be actual objects of conation prior to their actual attainment.

What, then, is the actual object of a man's wanting when he wants a house built? It cannot be the completed house, since that is not actual. Nor can we say that he does not have an actual object for his wanting, since clearly he wants something specific. A suggestion is that what he wants is what he means. He wants *that* his house should be built. He cannot want the house as the present actual object of his want, since the house is not yet actual, but he can want what he actually means and that meaning actually does exist in the references of his anticipatory set. This, I believe, is the solution. When a man has an anticipatory want, the actual object of his wanting is his anticipation. The anticipatory set is the object actually charged with the energy of the drive, and actually valued for its cognitive references on the judgment that they

will lead the organism to a goal object which in turn will bring satisfaction to the drive. In short, the anticipatory set is at this point the object charged with the drive, and so the actual object of conative value. The set does have cognitive references to an object of cognition (namely, the goal object). But this cognitive object (the goal object) is not at the moment charged with the drive; nor can it be, since it does not yet exist. But through following the cognitive references of the set the organism anticipates attaining the cognitive object, which then actually will become charged by the drive and become an actual object of value. In virtue of this anticipation the cognitive object of the set is a potential object of value. The whole situation now begins to be clear.

Moreover, we have acquired a principle for determining an actual object of value. It is any object which a drive is actually charging. The drive is what institutes value. When a drive works upon or through an object, that object is endowed with value in virtue of the action of the drive upon it. The relation between the drive and the actual object is the activity of the drive in that object or on the stimulus of that object.

With this principle we can now pass right through the segments of purposive structures and for every segment specify the actual object of value there—unless none is there. Take an appetition. In a simple trial-and-error appetition in which an impulse pattern is present, but as yet no anticipatory set, there is no actual object of value. The organism wants but does not yet know what it wants. For this want, which is determined by the conditions of quiescence for this drive, there is a potential object of value, but for the drive at this stage there is no actual object of value.

When the appetitive activity acquires an anticipatory set, this is the actual object of value, and it remains so until the goal object is attained.

When the organism is in contact with the goal object and having commerce with it toward the attainment of a superordinate goal object or of the quiescence pattern, that object is the actual object of conative value. Finally, in the consummatory act the quiescence pattern itself is the actual object of value.

It is clear that a number of actual objects of value may be charged simultaneously by a single drive. If there are some superordinate anticipatory sets, all these will be charged and will be actual objects of value while the organism is in commerce with a subordinate goal object. So, while the hungry shipwrecked aviator is letting out his line and conatively valuing his line as an actual object of value in his commerce with it, he is also valuing as actual objects the succession of anticipations of catching a fish, hauling it in, taking it in his hands, and eating it.

In an aversion, the actual object of negative conation during the action of a riddance pattern is the object of riddance with which the organism is having negative commerce. The actual object in an apprehensive aversion is the object of apprehension when this is being actively responded to, and any superordinate apprehensive sets that are charged with the injective drive when these are not stimulated by their objects.

So much for the actual objects of conation.

The actual objects of affection are much less intimately connected with their valuing factor than are those of conation. In conation, if an actual object is not present the organism is trying to find one. But in affection there is evident no such anxiety to find an object. Pain is negative in itself, and pleasure is positive, and it is quite secondary whether there are objects for these values. As a matter of fact, affective values may have several alternative objects all at once.

If a person is bitten by a mosquito or is eating an apple,

and is asked what is the object of his pain or pleasure, he will unhesitatingly say that the mosquito is the object of his pain and the apple of his pleasure.

But now suppose the mosquito he sees and strikes at is not the mosquito that bit him, which of the two is then the actual object of his displeasure? The one is (1) the *actual stimulus object*, the other (2) the *imputed stimulus object*. With regard to the first there is no possibility of error, since it was in fact the cause of the sting. With regard to the second, there is, since it is based on a belief in the form of an apprehensive set.

There is still another possibility. Quite apart from any causal relation or any belief about the mosquito and his sting, a person might just find the mosquito unpleasant. The mosquito would then be an object of displeasure simply because the person attributed or projected displeasure upon it. By analogy (or perhaps by mere contiguity) many objects that have no causal connections with a person's previous or present behavior have pleasure or displeasure diffused over them. So a lover diffuses his ecstasy over everything he meets. Here again, no error is possible, for the object has no properties attributed to it which it may prove not to have. It is simply noted as an object upon which affection is placed. We may call this (3) an *object of diffused affection*.

Lastly, in a riddance pattern or a quiescence pattern, pain or pleasure is found in the very pattern of these activities. So there is pain in the scratch or the bruise itself, pleasure in the very consummatory act of eating, or drinking, or smelling, or hearing, in the sensuous qualities of these acts. We may call this (4) the *immediate sensuous object of affection*.

Plainly, all these are actual objects of affection. There is no good reason why they should not all be accepted as actual objects of affective value. They are all, of course, in one way or another, objects of conative value, also. Strangely enough, this is why they are of importance to affection. If a man

wishes to control his pleasures and pains, so as to have much of the one and little of the other, he does so by seeking or giving positive conative value to the objects of pleasure, and avoiding the objects of pain. A successful work of art, for instance, is an actual stimulus object of pleasure. For those who respond to it, consequently, it is a reliable source of pleasure.

Turning to achievement value, it is clear that there can be no actual object of positive achievement except upon the attainment of a goal. During most of an appetitive purpose, the object of achievement is potential. In an aversion, apart from interpolated anticipatory sets and goal objects to remove obstructions, there is, strangely enough, no actual object of positive achievement whatever; for the achievement of an aversive purpose is the avoidance of one or more actual objects, and an aversion ends in mere quiescence or nothing.

Negative achievement, or frustration, does ordinarily have an actual object, the frustrating object. This is also, in the nature of the case, an actual object of negative conation. So nothing more needs to be said about it.

All in all, it seems fairly clear that value is not primarily dependent upon an object, though it generally has one or more. Conative value lacks an actual object of some kind whenever an organism is forced into trial-and-error behavior. Affective value does not seem to require any object at all, though the immediate sensuous object is in fact always present. Pleasure or pain is just as much a positive or a negative affective value, whether predicated of an object or not. Achievement value does presuppose actual objects of conation avoided or attained. But an achievement cannot be correctly described as a relation between an object and something else. It is the completion of a whole purposive structure, containing often many objects both actual and potential. To define value in such a way as to require an object is conse-

quently to commit oneself to a distortion or a neglect of many facts structurally connected with the present subject of study, call it "value" or what you will. I call the subject "value" and adjust the definition to fit the subject. Purposive value, as we have descriptively defined it, does not require an actual object.

§ 20. The Potential Object of Value

BEFORE dealing with the potential object of value, it is necessary to reach certain conclusions about the nature of potentiality in general. My conclusions are the following (taking, as an example, an egg as a potential chick):

Potentiality involves three factors:

1) Present or given conditions—the generating conditions.

2) A future state or object—the potential object.

3) A law connecting the first with the second as a natural tendency or to some degree of probability—the connecting law.

The potentiality of (2) lies in (1) in virtue of (3). The potential chick lies in the egg in virtue of the laws of hatching which apply to the egg and tend to produce the chick. The relation of (1) to (2) through the law (3) may be called the "potentiality relation." The characteristic property of a potentiality relation is that one of its terms exists and the other does not. The egg exists, but the chick does not as yet. As soon as the chick exists, the potentiality dissolves. It follows that *a potential object by definition does not exist.* This point was brought out in the preceding section, but it cannot be too emphatically noted. If an object exists, it is not a potential object. If anyone affirms that an existing object is also a potential object, there is some confusion of thought. The term "object" is being loosely employed and the respect in which it is an existing object is not the respect in which it is a poten-

tial object. In strict usage, a potential object is never an existing object.

So much for a general definition of potentiality. Now it appears that there are two kinds of potentiality, depending on the nature of the law which is considered as connecting the given conditions with the potential object. If the connecting law is a human construct, a formula, or a probability estimate (in short, if the law is a hypothesis), I shall call it an extrinsic potentiality. It is extrinsic because a human judgment about the probable consequences of certain given conditions is not a property of those conditions. If, however, the law is one of the properties of the given conditions, I shall call the potentiality an intrinsic potentiality.

Someone looking at a boiled egg might make a judgment of the probability of its becoming a chick and put it under a hen on the hypothesis that eggs under hens often produce chicks. On the basis of the visual evidence on hand, it would be a genuine judgment of potentiality and would denote a potential chick on the grounds of the imputed probability. It would be entirely an extrinsic potentiality, however, because a probability judgment is not a property of eggs. As it happens, the judgment was in complete error about this egg. Any live fertilized egg, on the other hand, is subject to the law of hatching as one of its properties, *whether any man judges that it is subject to this law or not.* Any live fertilized egg has thus an intrinsic potentiality of producing a chick.

Another way of saying the same thing is that an extrinsic potentiality is subject to error. It was false that the boiled egg could produce a chick, though the extrinsic potentiality on the basis of the visual appearances as the given condition for his judgment was well enough established. But an intrinsic potentiality is a matter of fact and cannot be true or false, though it may be blocked or destroyed. A live fertilized egg has in fact a tendency to become a chick, but it may fall into

the hands of a housewife and be boiled. Nevertheless, until it was boiled it contained in fact the property of hatchability.

There are some writers who either implicitly or explicitly deny intrinsic potentiality. This seems to be Hume's position. He appears to conceive of only two kinds of relations applicable to such a situation as that of an egg producing a chick. The imputed causal connection might, he agrees, be considered that of logical necessity in the sense of consistency or noncontradiction, or that of what I am calling extrinsic potentiality, a humanly observed correlation with either an explicit judgment of probability or a "habit" of expectation. Hume appears to assert that no other connecting relation is conceivable. He then easily disposes of logical necessity and leaves his readers with only extrinsic potentiality.

I am, of course, questioning the Humian argument both in Hume and in his recent followers. There is plenty of evidence for a relation connecting present with future events. This evidence is the reliability of prediction and the control of nature. This evidence indicates relations which in fact have some terms which exist in the present and other terms not yet in existence in the future—the intrinsic potentiality relation. Any statement of a natural law including a time factor is a description of an intrinsic potentiality relation. The truth of such a statement depends upon determinate relations holding within a natural process, and such relations are intrinsic potentiality relations.

The bearing of this issue upon our topic is that the purposive structures we have been analyzing are in the nature of hypotheses descriptive of processes of behavior. So far as these descriptions are true, these processes must be regarded as going on in actual human and animal behavior. These processes contain intrinsic potentiality relations. If these relations are denied, one's conception of purposive value is very greatly affected.

It is, of course, the intrinsic potentiality relation that particularly concerns us in studying the potential object of value. An extrinsic potential object of value can be set up by anyone at any time by simply judging for himself the probability that some one of the actual objects of value discussed in the preceding section is going to occur. So, I may wonder if the President of the United States will have coffee for breakfast and will refuse eggs, whether he will receive the ambassador of Argentina, veto the new tax bill, find a means of concluding the mine workers' strike, and whether he expects to be reelected. My wondering automatically makes these objects extrinsic potential objects of value to the President. They are all in the nature of anticipatory or apprehensive sets on my part, motivated by my own drives, showing that the attitude of the President on these matters is in some way a matter of fear, or hope, or gratuitous amusement to me. An extrinsic potential object of value is merely a nonexistent object which someone judges may sometime be an actual object of value to someone.

An intrinsic potential object of value, however, is one involved in the very structure of a purposive activity. To come at once to the point toward which we have been steadily heading, the question is about the status of the goal of an appetition. On the basis of our analysis of potentiality, the goal of an appetition is obviously in an intrinsic potentiality relation with earlier segments of the purposive act. *The goal of an appetition is an intrinsic potential object of value.*

This is why a purposive goal holds a place of such significance in men's minds. An appetitive drive constitutes the generating condition in relation to which its quiescence pattern is its potential object, and the connecting law is the structure of an appetition which we have previously been describing. Since this connecting structure is not itself a hypothesis but the actual set of processes described by the

hypothesis, it follows that the potentiality relation is intrinsic and not extrinsic. Accordingly, the quiescence pattern of an appetition is an intrinsic potential object in relation to its drive. Furthermore, since this object is an object of the drive, and the drive, on our previous showing, constitutes conative value in an organism in which it is going on, it follows that a quiescence pattern is *an intrinsic potential object of conative value* relative to its drive. In ordinary words, this end is what the drive is trying to get to. In fact, through its conditions of quiescence, a drive always has this intrinsic potential object of value, even though this goal is not known to the organism and consequently the impulse is blind through the lack of any *actual* object of conative value.

By the same sort of analysis it can be seen that a goal object is an intrinsic potential object of conative value in relation to its anticipatory set. For a drive will persist in its efforts to attain the goal object as long as the anticipatory set is a subordinate segment of that drive's appetitive structure.

These are the only intrinsic potential objects of value there are, however. They are the only objects of value lying ahead in the path of a causal law of purposive behavior. An object of riddance or aversion lies in the rear of a purposive structure and so is not intrinsically potential to the structure. It is true that a subordinate object of apprehension is responded to as a means of avoiding the *possibility* of having to react to an initial object of riddance. The cat avoids the stove in order to avoid the possibility of burning its paws. And unless there were a causal connection between the stove and the burning of its paws the cat's action would be both unnecessary and incorrect. But this causal connection is, so to speak, one of environment and not part of the causal structure of the aversion in process of action. The judgment implied in the cat's apprehension of the hot stove top is in the nature of a guess, so that the hot stove top is only an extrinsic potential object

of value so far as the cat's apprehensive set refers to it. Only if an aversion is compound and incorporates anticipatory sets in its structure does it acquire an intrinsic potential object of value.

This discovery that an appetitive goal, though not an actual object of purposive value, is yet not a mere idea or probability estimate, but is partly actual in being a term of an intrinsic potentiality relation, confirms an intuition of common sense. For it is a common belief that somehow the goal of a purpose is the "real" object of value for the purpose, and this meant definitely that the goal was something more than an idea or hypothesis or an estimate. We see that it is, since an intrinsic potentiality relation is the path of an actual causal process in action, and a goal is the terminus of such a path and is bound to be attained unless the causal path is blocked off by some other prepotent causal path or the organism itself is destroyed. An appetitive goal is thus factually determined by an appetitive structure, and is not susceptible to error as the object of a probability judgment is. It actually is what the whole purposive process is organized to attain, and the common man's intuition is correct that the terminal goal of an appetition is the most important object of value in the whole structure both while it is potential as the object of pursuit and finally when it is attained and becomes actual in the consummatory act.

All this is incomprehensible if a writer fails to observe the difference between an intrinsic and an extrinsic potentiality relation—between a judgment of probability and an actual causal process following a determinate path. Let it be granted that, so far as cognition is concerned, an actual causal trend is an inference from a probability estimate; but it must also be granted that prediction from an estimate would be meaningless without the presupposition of the actual trend. We can gain precise knowledge of causal processes only through

hypotheses about them, but hypotheses could never be generated and would be meaningless unless actual causal processes went on to make the hypotheses possible. A purposive act is not in itself a hypothesis. It is a causal process. And a terminal goal is part of this process and as such cannot be reduced to a hypothesis about itself.

§ 21. The Conditional Object

WHEN in the preceding section we said that a potential object of value is never an existing object, many readers may have been skeptical, having their thoughts on objects like tools, merchandise, and treasures of any sort. Is not a commodity an existent object and also a potential object of value?

In fact, here is a most confusing ambiguity. For a commodity like a hat or a vegetable or a tennis racket is not at all a potential object. It is a thoroughly actual existing object. What is potential is a value which does not exist but which is expected to attach to the object at some future time. A commodity is not a *potential object of value*, but *an object of potential value*. It is the value, not the object, that is potential and does not as yet exist. In order to avoid a verbal confusion between these two quite different concepts, I propose to call an object of potential value a *conditional object*, for such an existing object is a generating condition for a value whenever there is some probability that an organism might have commerce with it either as a goal object or as an object of apprehension.

There would be no occasion to say anything more about a conditional object, but for the fact that a person's judgment that a given object might be of future value to himself or to another often acts as a mediating judgment to endow that object with actual present value. I may not at the moment want a hat or care to eat a vegetable, but if I judge that I may

want the hat next month, or that I shall want to eat the vegetable this evening, then at once on the basis of that judgment I endow these objects with actual value, and may well demonstrate the fact concretely by sacrificing something else that I like (such as money in my pocket) for them.

The value that accrues to a conditional object in virtue of a mediating judgment of probable value institutes what we call credit. Such credit value may pile up on itself through a succession of mediating judgments in a most amazing way. Gold has some "intrinsic" value, but mainly today gold is valued in the belief that anyone will take it for almost anything we want, and therefore we accept banknotes in the *belief* that these will give us gold, and we accept checks in the *belief* that these will yield banknotes, and we accept stock certificates in the *belief* that these will yield checks, and so on up into investment trusts and holding companies. Such pyramids of credit value surround us on all sides and make up much more of our environment than we often fully realize. Practically everything we look at is a conditional object lodged in some credit pyramid. Think of the telephone on your desk, your office, your house (whether mortgaged or not), your milkman, your bottle of milk, the policeman in the street, the street which the cars go down without often jumping over the curb. These are all conditional objects involved in complex textures of credit value.

It is obvious that credit value is an extrinsic potential value. Consequently, it may be in error. And that is how we come to hear people speak of the "real" value of conditional objects—such as bonds, stocks, real estate,—meaning a discrepancy between the degree of value given the object on credit and the degree of value which someone thinks the object would have in actual trial. The value in trial—that is, the value of these objects as terminal goal objects or objects of riddance, apart from any mediating credit judgment—is

often called the "cash value." The ultimate cash values are, of course, the objects of our instinctive drives; but, in practice, objects of derived purposes resulting from the independence mutations are usually accepted.

It is a curious thing how long a time a pyramid of credit values may stand without actual trial. It is curious how hard it is to bring such a system to trial. The more the people who support such systems by their belief suspect the validity of their beliefs, the more they will often resist the testing of their values.

When, however, a mediating judgment in a credit system is proved false or ceases to be given credence, then all the judgments in the pyramid that depended upon it lose their validity, and all the conditional objects of those judgments lose their value, and the whole credit system crashes to a level below that mediating judgment. That is what happens in a financial panic and economic depression, in the collapse of a nation at war when confidence in its armies or its leaders is lost, or in the disappearance of religions when their faith grows thin.

The great practical value of truth, so far as we know it in everyday life, is the means it gives us to keep our credit systems sound and fairly close to the cash values. But modern societies evidently have yet a good way to go in the use of this instrument.

Credit values and the conditional objects to which they attach properly occupy a preponderant part of men's time and attention. Clearly, economics studies one phase of these values in society, political science another. Surprisingly, a little reflection shows that all science is a study of conditional objects of value—unless someone takes the extreme view that pure science should be a study of objects utterly useless to man. But in fact science is generally applauded as man's means of acquiring power and control over nature. Engineer-

ing and medicine deliberately put this knowledge to human use. If scientific objects were not conditional objects, objects which men believe it will sometime be of *value* to men to know the nature of, it is questionable if any scientific laboratory would remain open a year. If faith in the potential value of scientific work were lost, science would be no better off today than witchcraft. It appears, then, that practically the whole range of human study is concerned with conditional objects and thus comes within the general domain of value studies.

There is a widespread idea that science is not concerned with value. The tangle of confusions involved in that idea is hardly worth working over. There can be little question that the institution of science is socially supported in order to supply us with true mediating judgments for conditional objects of value in man's environment. A knowledge of mechanics or trigonometry is like having a box of carpenter's tools in the basement. They all are conditional objects of value.

But conditional objects must not be confused with potential objects of value or actual objects of value. They are existing objects which may be actual objects of value at some time.

Works of art are also, of course, conditional objects. The respect paid to certain works of art is clearly a credit value, based on a belief that these objects are capable of stimulating some specific sort of consummatory value. Just what the nature of this credit value is and what justification it has, is the prickly problem of aesthetic criticism.

So far as ethics deals with the worth of existing men and social institutions, it is also dealing with conditional objects.

So far as history deals with the reputations of men and nations, it deals with conditional objects.

The range of conditional objects is practically that of the range of human interest.

§ 22. Evaluation

WE ARE now at last in a position to speak effectively about evaluation. By evaluation I mean judgments about the attribution of value to objects or events, and about amounts of value. There are thus two types of evaluative judgment: (1) the qualitative judgment asserting the presence or absence of some sort of value, whether positive or negative; and (2) the quantitative judgment asserting the amount of value present.

The criterion for determining the qualitative judgment for any kind of value is the definition of that kind of value. Thus the presence or absence of purposive value is determined by the definition of purposive value. In order that such a definition may not be arbitrary, it is essential that it be derived from descriptions that are as nearly true to the facts covered as is possible.[5] This is why we took such pains in describing purposive behavior. For on the truth of these descriptions of appetitions and aversions depend the reliability and the justifiability of the definition of purposive behavior which is to function as the qualitative criterion of purposive value. This definition is the ultimate criterion of value for the type of value defined. In judging that something is or is not an instance of purposive value, positive or negative, there is no appeal beyond the descriptive definition of purposive value. Questions may be raised about the truth of the descriptions contained in the definition, or on which the definition is based. But this only leads to a revision of the description and a corresponding refinement of the definition. After the revision, there still is no criterion of value to which appeal can be made beyond that of the definition of the kind of value concerned.

[5] For a discussion of the nature and function of the descriptive definition see "The Descriptive Definition," *Journal of Philosophy*, Vol. XLIII, No. 2 (January 17, 1946), pp. 29–36. There is also a brief discussion in *The Basis of Criticism in the Arts* (Harvard University Press, 1945), Lecture I.

If we want to know whether anything is an instance of conative, affective, or achievement value, we refer to our definitions of these kinds of value in sections 16, 17, and 18. In short, the ultimate criteria of purposive values of different sorts have already been established by our descriptive definitions of these values. Consequently, the qualitative evaluative judgment in the form '*x* is (or is not) a value' of some specified sort, requires no more to be said about it here, since already we have carefully set up the empirically justifiable criteria which warrant the truth of the judgment.

But we have said little that bears on the quantitative judgment of evaluation—the amount of value of any sort that may be present. A criterion for a quantitative evaluative judgment I shall call a *standard.* The question now is how to determine what standards are relevant to any particular qualitatively defined value. Though there has been much confusion in discussions of this subject, the answer is very simple. A standard is relevant to a definitional criterion of value if it consists in the quantification of characters required for the definition. Such a standard I shall call an intrinsic standard. Since, for instance, conative value has been defined, according to our theory of affection and conation, as the tension of a drive present in any segment of a purpose, and tension is a trait having degrees of intensity, it follows that degree of tension is an intrinsic standard of conative value.

Let us now inquire what are the intrinsic standards for conation, affection, and achievement. These can immediately be found by examining the definitions of these types of value and noting the traits that admit of quantitative variation.

The standards of conation are obviously three: (1) intensity, (2) duration, and (3) number. The more intense the tension of a drive and the longer it lasts, and the greater the number of drives in action, the greater the amount of conative valuing. These quantitative traits may be directly felt

and reported from introspection, or may be regarded as attributes of bodily tensions which are the source of the conative feelings.

The standards of affection are likewise three: (1) intensity, (2) duration, and (3) number. The greater the number of painful or pleasant segments of purposive acts, and the greater their intensity or duration, the greater the pain or the pleasure.

The determination of the standards of achievement is not as simple as the preceding. Positive achievement, as we saw, is the bringing of a purposive act (whether an appetition or an aversion) to a termination, and the greater the efficiency of the act the greater the achievement. The efficiency of the act depends upon the speed with which the act is brought to an end. But this in turn depends upon the correctness of the mediating judgments implied in anticipatory and apprehensive sets. Moreover, an achievement is greater in proportion to the intensity of the drive motivating the act. It is more of an achievement to escape from a shark than from a mosquito. Also, the greater the amount of effort (i.e., the duration of an act of given intensity) the greater the achievement, *provided* the prolongation of the act is not due to bad judgment in making anticipatory and apprehensive sets. It is more of an achievement to climb a mountain than to climb a hill, because it takes longer. But it is less of an achievement to take a longer than necessary time in climbing the mountain because of bad judgment in choosing an approach. Lastly, there is more achievement in attaining a number of purposes than in attaining just one.

If we gather these observations together, the standards of positive achievement appear to be: (1) correctness of judgment in selecting subordinate acts, which determines the intelligence of the achievement; (2) conative intensity, which indicates the importance of the act; (3) speed, which deter-

mines the efficiency of the act; (4) duration, subject to good judgment, which shows the amount of effort in the act; and (5) number, which tells of the massiveness of the achievement.

Degrees of negative achievement value would be the reciprocals of these five standards, indicating frustration and failure.

Now notice that what determines the good or the bad (the positive or the negative) of each of these types of value is the organism's own behavior. Negative conation is bad because the organism is there avoiding objects, and positive conation is good because the organism there seeks objects. Pain is bad in that the organism behaves so as to have the least of it; pleasure is good in that the organism behaves so as to get the most of it. Achievement is good, as is shown by the struggles of the organism to increase it; frustration is bad, as is shown by the way organisms try to have less of it. What makes these positive values good and the negative ones bad is the *fact* that organisms tend to increase the positive values in their behavior and decrease the negative. Good and bad and better and worse in purposive values are matters of fact. These standards are factually based.

That standards of value are derived from matters of fact is so much opposed to a long tradition that this observation of ours will require some emphasis. Let me at first say negatively that unless our standards of value are based on facts they would be exceedingly dangerous things by which to guide our conduct. Nowhere is truth more essential than in personal and social guidance. And unless someone still believes in *a priori* or authoritarian or revelational truths (which the history of cognition has given good grounds for distrusting) the only source for the reliability of standards for individual and social guidance is empirical truth. Standards of value must in some manner be closely related to factual descriptions of value if they are to have any empirical justification.

To anyone who has followed carefully the manner of our approach to the study of purposive value it will be apparent that nowhere have we stepped out of the bounds of descriptions of fact. Our descriptions may sometimes be in error, and always they are in the form of hypotheses, but they refer to and are solely verified by facts of behavior or of introspection. Never have we stepped out of the sphere of empirical description. Since our standards of conation, affection, and achievement are merely the noting of quantitative factors present in these phases of purposive behavior, these standards are themselves descriptions of fact.

But the traditional query arises, "How can an *ought* come out of an *is*?" First, remember once more my declaration that I would not give the least credence to an *ought* that did not come out of an *is*. But, second, let me show in a simple instance just how this happens.

Take any skill, such as carpentry. Now, sawing and planing and hammering and all the other activities that go into the skill of carpentry are primarily subordinate acts in the attainment of a variety of goals such as chests, cupboards, furniture, houses. These goal objects actually are aimed for and attained in many purposive acts. And the skill of carpentry is actually used in these acts as a means of attaining the goal objects. These are empirical facts. Now, it is furthermore a fact that in purposive activity a strong drive seeks its terminal goal with the greatest speed and directness. If there are errors among the subordinate acts, or if there are roundabout routes of reaching the goal, an organism tends to eliminate these in order to reach the goal in the minimum time. In fact, the organism behaves this way, acts preferentially for the shortest route and against the longest. In fact, then, the organism sets up the shortest route as the standard of its activity in attaining its goal. Whether the organism is aware of this standard or not is irrelevant. In fact he behaves according to this standard of achievement.

A carpenter's skill is nothing more than a system of shortest routes for attaining certain goal objects. When carpenters are aware of these shortest routes, they can describe them and teach them, showing apprentices where they are wrong in the wastefulness of certain acts. The standard or the ideal of carpentry is simply a description of the shortest routes attainable in certain purposive acts, routes which in fact men having strong drives for these acts tend to attain.

The connection between an *is* and an *ought*, or rather the disconnection, for that is what the traditional critics are troubled about, consists in the fact that purposive behavior is not usually at the first trial as effective as it can be, and that *errors* have to be eliminated. The errors are negative values (which is just the same as saying that they are segments of purposive acts which the organism in fact eliminates). These negative values represent the gap between the organism's present act which does occur in fact and the fully efficient act which in fact the drive aims for and which with experience the organism learns to perform. The bad performance, the perfect performance, and the learning period which connects the two under the pressure of the drive are all matters of empirical fact. They are all matters described in purposive behavior and are subject to verification. The validity of the perfect performance as an ideal of a skill such as the skill of carpentry rests on the fact that it is the shortest route by which certain drives can attain certain goals.

There is thus no question that a skill is an empirical standard, based on the facts of purposive behavior. It is determined and sanctioned by the causal structure of purposive acts. It is an empirical standard because in fact purposive behavior is guided by this standard, or, what is the same thing, tends to achieve it.

In pointing out, as we have just now, the factual basis of the standard of a skill, we have been practically giving the

factual justification of two of the standards of achievement, namely, correctness and speed. A technical ideal is simply the quickest and most nearly correct way of achieving a goal. The organism in purposive behavior in fact prefers the ideal way and to the best of its ability acts in that way, and that is the only reason and the sufficient reason why this ideal is justified.

Now, if this principle is understood—namely, that the validity of a purposive standard consists in the fact that purposive behavior actually tends to enact it,—we are ready to apply this principle to our three kinds of value, and we shall make an interesting discovery.

Let us begin with conation. There is no question about the fact of positive and negative conation. But if one asks what in fact justifies our regarding a riddance pattern, for instance, as negative and an impulse pattern as positive, it appears that the evidence for calling the one negative and the other positive cannot be found in conation itself, but only in achievement value. The positive achievement in an aversion is to get rid of a conative object and attain mere quiescence, but the positive achievement in an appetition is to attain a quiescence pattern or consummatory act. It is the nature of the positive achievement that empirically determines that in an animal's behavior one kind of conation is negative and the other positive. Conative value thus appears in fact to be subject to the standards of achievement value.

We shall find this still further verified. It comes out very clearly in the standard of duration for conation. There is no question that the longer conation goes on the more conation there is. But note that in purposive behavior the organism in fact acts in such a way as to cut the duration of conation to a minimum so as to get maximum achievement. In short, the standard of speed of achievement in fact overrides the standard of duration of conation. Intuitively, we judge that the

longer one wants positively or negatively the worse it is. But this judgment cannot be derived from conation alone, but only by implicitly setting the standards of achievement above those of conation.

But a more surprising fact is still in store for us. The evidence of behavior indicates that the standards of affection take precedence over those of achievement, so that the final result of our analysis is that the ancient pleasure standard is after all justified as the supreme standard of value in individual purposive conduct.

There are two main reasons for believing this. The first comes from an examination of the structure of purposive acts. It is noteworthy that the pivotal act of an aversion is its riddance pattern, which is always painful, and that the achievement in aversions consists in neutralizing this pain and reducing it—so far as possible—to nothing. Correspondingly, the pivotal act of an appetition is the quiescence pattern which is the locus of pleasure; and the achievement in an appetition consists in attaining this consummatory act. To clinch the matter, we recall that in fact the speed of action usually slows down at the edge of the consummatory field. Introspectively we know that the reason we hurry the subordinate acts necessary to attain the goal of an appetition is that we want to reach that goal as quickly as possible, and that the reason we change tempo at the edge of the consummatory field is that then we may get all the satisfaction out of it we can. In short, when pleasure enters in the consummatory act the standard of duration of pleasure takes precedence over that of speed of achievement.

The second argument is sociopsychiatric. Many men do not appear to give precedence to the pleasures of a consummatory act, but attain their appetitive goals as quickly as possible and immediately begin upon other acts of achievement. Such men are often called men of achievement. The

argument about such behavior is that it is not normal purposive behavior, and that it indicates either that the organism is working under conditions of great social or environmental pressure where the life of the organism would be endangered if it did not behave in this restless manner (as, for instance, under conditions of war) or that the organism is suffering from neuroses which have the same effect as external pressures but lack the same objective justification. In both these alternatives, the dominance of achievement value over affective value is in superficial appearance only. A thirsty soldier who drinks from his canteen when in battle cannot safely extend his satisfaction. The pain of apprehension overrides the pleasure of satisfaction. It is a conflict of drives with their attendant affective values, not a dominance of achievement value over affective value, that accounts for the action. In the neurotic man of restless achievement the same sort of conflict is going on internally. His fear of not being constantly on the go is too painful to allow him the pleasures of consummation, not to mention his possible direct fears of the pleasures themselves. In short, the structures of purposive acts are still such as to lead to the avoidance of pain or the attainment of pleasure, and this is the tendency of even these restless organisms' behavior, but in their cases the best they can do for affective value is to keep the pains as few as possible, and the pleasures have to be foregone.

Thus, the primary evaluative judgment for purposive value appears to be that based on the affective standards, namely, the greatest amount of pleasure (in terms of duration, intensity, and number of acts) and the least amount of pain. The classical arguments against hedonic evaluations, to the effect that they cannot be made with precision, seem to be specious. Because we lack means of measuring something with precision is no ground for denying the existence of the thing, or even for denying that it can be measured roughly.

Clearly there is pleasure in a drink of water for a thirsty man, and in cool shade for a heated man, and there is more pleasure if the man has his drink in the shade than if he has it in the sun, or has the shade without the drink. In fact, just see how such a man behaves.

This seems like a very long road to have traveled to reach so old and well known a standard of individual conduct. But as a result of our analysis the hedonic standard does not come out in just the way it did in the classical accounts. It comes out in a qualified form, enriched, and embedded in the dynamics of purposive structures.

For our conclusion substantiates neither the traditional psychological nor the traditional ethical hedonism. It mediates between the two. It is not psychological hedonism, because it is drives that primarily motivate behavior, not pleasure and pain. But we note in fact that the tendency of behavior through drives is such as to give dominance to the affective standards of value. And this is not exactly ethical hedonism, for in a gesture of despair this view disavows all claims to factual descriptions of behavior; yet on our evidence purposive behavior does in fact tend to enact the hedonic standards. Unless this were so, we should not consider them as empirically sanctioned standards of value.

Moreover, although the hedonic standards of value apparently have priority over others, our study has shown that conative and achievement values are none the less values, and that under certain circumstances they are important to consider in their own rights. Certainly they are so closely connected with affective values that these latter cannot be intelligently sought after and integrated except through the former. The control of affective value is, in fact, attained only through conative and achievement value.

The great function of conative value is to attribute value to objects. Notice that most of our discussions of objects of

value, whether actual or potential or conditional objects, had to do with conative value. The value of an object is primarily judged by the degree in which we want it. The actual and potential objects of wants and nonwants are our environmental signposts by means of which we direct our behavior over wide stretches of time. Without these conative values our behavior would be almost entirely uncharted.

Achievement value has the function of attaining or avoiding these objects of conative value. But the achievements turn out not to be for the sake of the objects, but rather for the sake of the pleasures the objects can give or of the pains avoided by the avoidance of such objects.

Achievement value has also another function, one of a sort we have not yet mentioned. In this digest we have been seeking out the values in purposive behavior in the individual organism, and dealing practically only with individual purposes, because these are the limits within which the digest was conceived. Now, in conformity with the hedonistic and individualistic tradition, my belief is that the standards of evaluation which hold for a single purpose will hold also for combinations, integrations, and conflicts of purposes within an individual. But, contrary to that tradition, it is also my belief that these standards of evaluation cannot automatically be extended outside the individual to situations in which several individuals are involved, or to whole societies. The problem of values in society cannot be solved by simply enlarging to a social scale the solutions for problems of value within individuals.

The reason is that in fact purposive behavior in the form of appetitions and aversions does not occur outside of single animal organisms. We have shown grounds for holding that affective value has evaluative dominance over individual human purposive behavior. This is no ground, however, for believing that the same holds for judgments of social value. My

belief is that it does not always hold in the social context, and that here, under certain circumstances (those arising in what I shall call the functional society), achievement value gains an evaluative dominance over affective value. I will just briefly indicate in the next section how I think this happens, and with that this digest will come to a close.

§ 23. Social Value and the Survival Factor

A SWIFT GLANCE over the history of ethical and social theory among civilized cultures reveals a basic continuous opposition of two types of ethical view. The fact of the persistency of this opposition is significant, for if either side of the issue is ignored our conception of human values is unbalanced and incomplete. The issue brings to light in the value situation a factor which would not have been suspected from our previous analysis on account of the very limitation within which that analysis was carried on—the limitation, namely, of having restricted our field of study to that of purposive behavior. I believe we have uncovered all the value factors that lie within that field, and have shown their interconnections. But, from the nature of this limitation, we would not be likely to observe any factors the sources of which were outside the structures of individual purposive action.

I do not intend in this final section of our study to do more than indicate (1) the presence of an additional factor outside of individual behavior and (2) its relevance to value theory. I am not just now prepared to give a descriptive analysis of it. But I shall try to show the importance of its effects. It makes its appearance, or emerges, as I said, from a significant issue in the history of ethical theory. This is the issue between individualism and overindividualism.

On the one hand is the individualistic ethical theory, which stresses the basic value of the interests of the individual, the

satisfaction of his desires, his pleasures and his avoidance of pains. Out of this material comes the pleasure standard, and, whether entirely legitimately or not, in terms of a strict individualism,[6] this standard is generally extended bodily beyond the individual and is projected upon society, yielding the familiar Greatest Happiness Principle—that is, the over-all evaluative criterion of the greatest happiness for the greatest number. Rationally carried out, this ethical theory advocates for every individual the maximum freedom of decision consistent with the minimum interference with the decisions of others. For each man is regarded as the best judge of his own desires, of what hurts him and what will give him satisfaction, since pains and pleasures and the purposive drives behind them have their seat only in individual organisms. On this view, the function of government is simply to institute sanctions, preferably with the agreement of all the individuals concerned, with a view to restraining men from undue mutual interference in the carrying out of the Greatest Happiness Principle. Politically, this view develops the typical forms of representative government and division of authority, or, in a word, decentralization.

On the other hand is the overindividualistic ethical theory,

[6] The individualistic value criteria cannot, I believe, in rational consistency be extended beyond a sort of social prudence in which a number of individuals by voluntary coöperation agree to impose sanctions upon one another as a means of attaining a greater amount of individual satisfaction for each severally. This is the core of truth in the "social contract" theory of the state. But actually the integrative force that draws men together into social groups and produces a social solidarity is something much deeper and stronger than individual prudence and farsighted expediency. It is the overindividual factor that we are about to describe. This factor, sensed though not overtly acknowledged by the individualist, accounts, I believe, for the remarkable ease with which so many individualistic moralists pass from the standard of the greatest amount of happiness for the individual, which is justified in human behavior, as we have seen, to the greatest amount of happiness for a society, which has by no means the same justification. The structures of purposive behavior, as we saw, bring it about that each organism (here specifically each man) behaves so as to extend his satisfaction and reduce his pains within himself. It does not follow that the pains and pleasures of other organisms are any concern of his. They are not his values, and do not enter into his purposive structures except indirectly, as, for instance, through sanctions.

which stresses a power beyond the individual. This may be conceived as a divine power, or as an inscrutable absolute imperative, or as reason, or as some directive cosmic or social force. In some such form this type of ethical theory seeks to justify criteria of value that overrule individual desires, pleasures, and pains. These latter are often disparaged as hostile to genuine ethical values and in need of being held down and controlled. There are many forms of overindividual ethical theory, ranging from views justifying religious authoritarianism and benevolent paternalistic despotism to certain forms of socialism with the ideal of a functional society. Varied as these overindividualistic views are in other respects, they are all agreed that an individual does not have inalienable rights and that the emergence of an impulse in an individual is not by any means obviously the emergence of a value. Values have their primary justification elsewhere, and an individual and any of his personal desires are not to be regarded as intrinsic sources of value, but only become values when judged to be so by a higher criterion.

Without arguing the matter out, I am going to accept the hypothesis that the ethics of that type of socialism which sets up a functional society as its ideal is the most fully justified of these forms of overindividualism and most clearly perceives the factor which individualism misses. What, then, is the general structure of a functional society, and where does it look for the primary sources of value?

A theory of a functional society stresses efficiency. It conceives a society as consisting primarily of a number of functions to be performed for the well-being of the society and its members. There has often been a tendency to harden these functions into classes and castes, particularly to establish a distinction between a governing aristocracy and a governed class performing the economic functions. But such fixed classes soon cease to be genuinely functional in a society, and

become sources of exploitation and friction. The logic of the theory requires that the functions should subserve efficiency and that the members of the society best fitted to perform these functions should after careful sifting be assigned to perform them. This, then, is a planned society. There is an integration of functions, and it is the duty of every individual to find the function for which he is best fitted and to perform that function to the best of his ability.

Such a society is accordingly, in principle, highly rational. Reasons can be found for every function, and for every individual to be performing his function. No consideration is required for a man who fails in his function or objects to it. Justice consists in the due performance of function. Service to the society is the over-all virtue, and is to be obtained through loyalty, if that is possible, for loyalty signifies high morale and spontaneity of coöperation, and maximum efficiency; but if loyalty is lacking, discipline is invoked, and the sense of duty. Self-sacrifice is constantly to be expected, and to give one's life effectively for one's society is the highest of all honors and the highest service.

Necessarily for the maximum efficiency, such a society is highly centralized. Its most serious problem is that of guaranteeing for itself the most efficiently responsible men in the highest governmental positions, for it is essential for maximum efficiency that these men hold supreme power and that their decisions be capable of rapid execution. There is a natural tendency, the more obvious the greater the need of efficiency, for this power to be placed in the hands of one man.

There follow also certain characteristics for the functional society with respect to education, social beliefs, and the dissemination of information. For the maximum efficiency, these are carefully planned, censored, and organized about the main ideals for which the society is working. Under the older forms of overindividual society, a state religion carried on

most of these functions. Nowadays it is performed by centrally controlled schools, press, radio, and propaganda generally. Logically, this is entirely rational; for who should know the truth better than those whose function in such a society is to examine the truth, and how could the dissemination of less than the truth be justified? It may even be advisable, for the efficiency of social morale, deliberately to modify the truth for general consumption. Even Plato, with some embarrassment, justified a moderate use of "the medicinal lie." In most overindividual societies, however, where there has been extensive control of beliefs, it can probably be asserted that the ruling and responsible groups themselves believed what they indoctrinated. Deliberate and calculated indoctrination of falsehood is a recent achievement of great societies. Needless to say, in an ideal or genuinely efficient functional society those who were responsible for the education and indoctrination of the people would be scrupulous of the truth, or at least so far scrupulous as not to lose the confidence of the people.

We are familiar with these two ethical ideals, and with the decentralized and the centralized social structures which follow from them, and the tolerance that goes with the one and the firm faith that goes with the other. Actually, within most modern societies these two sets of ideals are mixed, and some of our most difficult moral problems arise from a vacillation between these two ideals without our perceiving the opposition of their judgments, much less our attempting to find the sources of the conflict and a solution for it.

What sources of justification have these two sets of ethical ideals?

The source of the individualistic ideals is obvious to us in our previous study. Their source is in individual purposive behavior. Individual values emerge from drives within the organism, and the hedonic standard comes out as the evaluative resultant of these individual forces.

But what is the source of the overindividualistic ideals? What forces corresponding to the instinctive drives of an organism lead to these evaluative standards? It is clear that we would not countenance conceptions of overindividualistic forces that were not as firmly based in empirical evidence as the instinctive drives of individual organisms. What overindividual forces bearing upon human actions are there which would have a control over human conduct and produce a set of empirically justifiable overindividual standards of evaluation?

I suggest that these are the evolutionary forces of survival. There is a pertinent parallelism between the operation of the dynamics of purposive behavior in individual organisms and the dynamics of evolutionary forces in natural selection. Just as a drive, through its conditions of quiescence, determines a terminal goal which an organism will tend to attain, so a biological species, through its structure, its breeding, and the conditions of its environment, determines the sort of selection that will tend to ensue. And just as the terminal goal of an appetition determines successful and unsuccessful achievements in the progress of a drive, so the conditions of survival determine successful and unsuccessful forms in the struggle for life.

Now I am not implying that the evolutionary process is an instance of purposive behavior. Only organisms have appetitive drives which institute intrinsic potential goals. But the evolutionary process is an instance of a natural tendency. It happens that this natural tendency bears heavily upon the purposive behavior of organisms. For unless an organism may live, it cannot achieve the goals of its drives. And unless its drives are of a kind to conform to the natural tendency of the evolutionary process within which that organism is involved, that organism will perish, and its drives and goals will perish with it, and the drives and the goals of other organisms whose

purposive behavior did conform to the evolutionary tendency will survive and be propagated.

There is, in short, an empirically observable survival factor which evaluates the purposive structures of individual organisms and rejects some of the structures as unfit for survival and accepts others.

From a strictly individualistic point of view, it is repugnant to conceive of the survival factor as an evaluative criterion. From this point of view, value has to do with conation, achievement, and pleasure and pain; and if some organisms have desires the satisfaction of which tends to lead to their extinction, why should not they make the best of life while they may? If they die, that is then a purely neutral fact having nothing to do with value. An organism with a set of purposes capable of continued life and propagation, says the individualist, is no better than one with a set of purposes which restrict his life and propagation. "Survival of the fittest" does not imply "survival of the best," but only the "survival of those that do survive."

But only on the assumption of his definition of value which restricts value to the contents of individual behavior can the individualist carry out this argument. He is, in essence, merely declaring that by his definition value is conation, personal achievement, pleasure and pain; that the survival factor is not one of these, and that consequently it cannot be a source of value. He is, accordingly, simply begging the question.

There is no reason why value must be restricted to the contents of individual behavior. There is at least one good reason why it should not, namely, that so far as we wish to make use of our studies of value for our guidance in making decisions about personal conduct or social policy, we cannot leave out of consideration any factors which bear upon activity in these fields. Clearly, the survival factor bears heavily on these fields.

One of the most obvious traits of animal and human behavior is tenacity of life. Organisms that lacked it have long ago perished. There is, to be sure, no specific drive for life, no instinct of self-preservation in the precise sense of instinct defined earlier, but the whole instinct system is organized through evolutionary process to this end and the process still goes on. Biologically, man was developed primarily to live, not to be happy. The proof of this is the way men will go on living in pain and suffering, with very little prospect of happiness. The capacity of happiness is simply one of the biological inducements to life. Even though, as we saw from the very structure of men's purposive acts, all men live in the hope of happiness, men constantly live on without happiness, and live with great energy. For drives go on even though consummatory acts are never attained, or, when attained, are sharply abridged. There is nothing biologically more childish than Schopenhauer's argument that if there is more pain than pleasure in a man's life his life is not worth living. Pain was given to men to prolong life, not to shorten it. It has the same biological function as pleasure. It is a warning of something to avoid for the continuance of life, as pleasure is a sign of something conducive to vigor of life. If there were no pleasures at all in life, men would still live, as in cold fact they do for long stretches of time.

So, in summary, in making human decisions the basic decision is about how to keep alive, not about how to be happy; and if matters of value are matters significant in making human decisions, the survival factor is a source of value. Moreover, it is a basic source of value just as a drive is. Indeed, it is more basic than a drive, since it is itself the dynamic source of the drives themselves. It is the evolutionary process which has selected the system of drives comprising an animal's behavior repertoire.

But what has all this to do with the overindividual ideals

of a functional society? This—that in men the pressure of biological competition for survival makes its impact felt not so much directly upon the individual organism as upon the society in which the organism is contained. The power of man in survival comes mainly from the power of his group to survive in competition with other groups. Consequently, in general, the individuals of the group that survives tend to survive, whereas those in a group that perishes tend themselves to perish.

Now the modes of group survival are complex, and there are many paradoxes in the course of history. But one of the principal means of group survival is social solidarity. It is precisely this which the ideals of overindividualism represent. If a social group is threatened with extinction, its best chance of survival is to centralize its organization and develop the maximum efficiency in the manner of a functional society. Individual human happiness then counts for little or nothing (at best a hope for the future or some pictured heaven of an afterlife), and loyal identification with, and support of, the group whatever the cost to the individual, absorbs every source of energy.

The justification, then, of the functional ethics derives from the survival factor.

If this point is seen, we can understand how it happens that there is so intense a conflict between the ethics of individualism and the ethics of overindividualism. The one is based on human drives within the individual; the other, on the life process itself as it affects the species and the group. Both base value on dynamic natural trends and get their ultimate sanctions from these dynamic tendencies, but the directions of the trends often conflict and lead to ethical ideals that are diametrically opposed.

Is any solution of this opposition possible? It is, if we can discover that each ideal is appropriate to different conditions,

and that each is inappropriate where the other is appropriate. This I believe can be shown, and has actually been implied already. The functional society and ethics are appropriate under conditions of social pressure where the life of a society is threatened. Then each individual must submerge himself in the social whole or all are likely to perish. But when the pressures upon a society are released it is no longer necessary for the group to discipline the individual, and then the individualistic ethics and the decentralized form of society are appropriate, and attempts to maintain a centralized society under conditions not warranting it breed unrest and rebellion. A dogmatic belief in the one or the other of these ethical views is blind to at least one of the basic sources of human value, and is likely to lead to both unnecessary loss of life and unnecessary suffering.

The situation so depicted almost declares its own solution, which is a reconciliation of both ideals through the mediation of the concept of social pressure. The result is the ideal of appropriateness of social organization to the conditions of social pressure. The greater the pressure the greater the demands of functional organization and discipline; the less the social pressure the greater the demands for freedom of individual decision and social decentralization. Many gradations of centralization and decentralization are possible, and many distributions of each, so that extremely precise adjustment of social organization to existing conditions is theoretically possible. A highly disciplined medical staff in a city hospital is entirely consistent with a highly individualistic form of city government. In short, we come in sight of what amounts to a new ideal which synthesizes the individualistic with the over-individualistic criteria in terms of conditions of social pressure. We may call this the ideal of *the adjusted society*.

In the adjusted society both the values of individualism, with its primal claims of personal freedom of decision and

maximum of satisfaction, and also the values of overindividualism, with its primal claims of social solidarity and power of survival, are recognized. They are both recognized, however, as being suitable to certain conditions, not as absolute ideals. The over-all ideal becomes the adjusted society, or the adaptation of social structure to the pressures of conditions. This requires social judgment in estimating conditions present and potential and determining where or how far duty and discipline must displace pleasure and freedom.

There is, of course, a sense in which the overindividual criteria based on survival of life for the group have a permanent priority over the individualistic ideals. The overindividualistic ideals theoretically never have to give way to the individualistic. Nevertheless, practically, if overindividualistic demands are not softened or suspended under conditions where discipline is unnecessary, there is much loss of individual satisfaction. As individuals under such conditions, we see clearly, as soon as we understand the situation, that it would be foolish of us to maintain unpleasant discipline just for discipline's sake when there is no probability that we shall need the results of the discipline for the saving of our lives. Our feeling that such unnecessary discipline is foolish is, of course, our feeling of our own drives within us asking for relief from unnecessary pain and for the full satisfactions of their consummatory acts.

It follows that as individuals we all evince a quite proper bias for the individualistic values as over against the overindividualistic. As individuals severally, it is consequently foolish for us to let the overindividualistic determinants of value get control of our lives if, as individuals collectively, so to speak, we can keep them from doing so. In short, for us as individuals the individualistic ideals, from the very fact that they are the projections of the trends of our own drives, have priority over the overindividualistic.

I wonder if I am making this point clear—the peculiar paradox of human life,—that in spite of the impersonal priority of the overindividual ideals of value, and the certainty that they will take over if we do not keep them at a distance by keeping social pressures low, the individualistic ideals have unquestionable priority for us as individuals.

Let me put it another way. The individual lies in the field of influence of two sets of somewhat antagonistic forces, that of his own drives and that of the evolutionary life process. By means of his drives in what we call voluntary or purposive action, he can, if he will, keep the survival forces at a distance and live largely within the influences of his own drives; for men can now deliberately keep the pressures of want and war at a distance in a manner that could happen formerly only by accident of isolation in some genial island or mountain fastness. Man can by his intelligence create a kind of industrial Garden of Eden for himself, since a Garden of Eden is simply the imaginative projection of man's individualistic ideals of happiness. But if he cannot direct himself by his own drives to create his own happiness, the forces of survival will sweep him into their field, impose discipline and duties, and select the fit from the unfit, those that may live from those that must perish.

There is a righteousness for both of these forces which work within men. But, contrary to much ancient tradition, the more intimate, and wiser, and gentler righteousness for every man to seek is that of his happiness and the happiness of all, not the righteousness of duty and service, and of losing oneself in the group so as to save oneself and so as not to perish as unfit.

The question is not which one of these is the higher morality. The ethics of survival takes over when the ethics of the individual fails. The point is that the individual, from the nature of the forces involved, is happier with the ethics of the

individual. But he cannot enjoy the ideals of individualism unless he can keep himself alive.

Consequently, the ideal of the adjusted society, as we have called it, emerges as a set of evaluative criteria suitable to judgments of value under all conditions. So far as men can attain a level of social intelligence and self-control to follow this ideal consciously, that achievement will produce a more powerful society than a rigid functional society which is ill-equipped to cope with conditions of prosperity; and in the long run it would produce more extensive happiness than an obstinate individualistic society, since this is always slow to become aware of threatening dangers and to realize its own weaknesses. "Eternal vigilance is the price of liberty" is an apophthegm the full significance of which perhaps only an analysis of values such as ours could convincingly unfold.